MDOT
Michigan Department of Transportation

OFFICE MEMORANDUM

DATE: May 25, 2005

TO: Region Engineers, Region Delivery Engineers, TSC Managers, TSC Delivery Engineers

FROM: Joetta Swain Parker, Acting Administrator
Office of Human Resources

SUBJECT: **Roll Out of the Technical Skills Plan**

On April 28, 2005, Civil Service approved the revised job specification for Construction Technicians (attached). Please share the job specification with your construction technicians. A meeting to discuss the roll out of the new Technical Skills Plan will be held on June 8, 2005, at the State Police Training Academy.

The purpose of this memo is to inform you that we will be transitioning from the Work Element System to the new Technical Skills Plan. Work elements will be accepted until May 1, 2006, for qualification purposes.

For Reclassification to the CT 9 and E10 levels:
For those employees who qualify for reclassification to the next level (CT 9 & E10), based upon completion of the required years of service, this will be retroactive to April 28, 2005. This is due to the updated Civil Service Job Specification. OHR and Therese Binkley are still working on which employees are affected. We should have a date by our June meeting as to when these employees will see this level and possible pay increase take place.

For Promotion to CT 11 and 12 positions:
Employees who are interested in job vacancies posted on the Intranet who are qualified, according to the new job specification, will be considered for the position along with those employees who are qualified under the work element system (if employees are not sure whether they qualify please tell them to apply).

Employees who are interested in **Construction Technician 11 positions** will need the following:

> **Under the Technical Skills Plan** - one industry certification (aggregate, density, bituminous, or concrete), the Storm Water Operator Certification and Soil Erosion & Sedimentation Control Certification, **or**
>
> **Under the Work Element System** – the necessary work elements for a Construction Technician 11.

Employees who are interested in **Construction Technician 12 positions** will need the following:

Under the Technical Skills Plan - two industry certifications (aggregate, density, bituminous, or concrete), Storm Water Operator certification, Soil Erosion & Sedimentation Control certification, plus Technical Skill #1 - Leadership, **or**

Under the Work Element System – the necessary work elements for a Construction Technician 12.

If you should have any questions regarding the new Technical Skills Plan, please contact Therese Binkley at 517-322-1741.

Joetta Swain Parker
Office of Human Resources

Attachment

Rev. 06/06/05

TECHNICAL SKILL PROCEDURES AND EMPLOYEE DEVELOPMENT PLAN FOR TRANSPORTATION CONSTRUCTION TECHNICIANS

All Forms Listed Throughout the Manual will be Updated

INDEX

Technical Skill
Program Objectives

This plan is designed to develop diversified skills defined by Technical Skills for construction staking, inspection, office engineering and leadership. These procedures and plan are to implement and maintain a Construction Technician Technical Skills and Development Plan for paraprofessional field construction personnel. The system will:

- Be fully coordinated with the State of Michigan Civil Service System and the State Employee Relations Policy.
- Be fully work related.
- Promote the efficient use of personnel by reducing reliance on specialists.
- Be based on continued satisfactory individual performance.
- Acknowledge possession of industry testing certifications and satisfactory completion of formal training.
- Encourage the development of employees to the journeyman level to enhance utilization, improve job interest and reduce cost.
- Be compatible and integrated with the employee's PMS (Performance Management System) and IDP (Individual Development Plan).
- Focus on leadership and employee development.

This manual outlines procedures for verifying proficiency of an employee to effectively perform individual technical skills.

Technical Skill #1

LEADERSHIP

Description: Demonstrate and practice the qualities of leadership.

Task List:

1. Schedule and assign project personnel effectively utilizing their abilities and qualification.
2. Effectively communicate orally and in writing.
3. Work with customers (public, contractors, landowners, and other department personnel) with win-win outcomes whenever possible.
4. Informally train coworkers in technical skills, department policies and protocol.
5. Understand and support the Michigan Department of Transportation's (MDOT) business plan.
6. Coordinate and monitor construction contracts and consultant engineering or testing contracts.
7. Coordinate safety training and compliance in a TSC or project office.
8. Willingly complete leadership training which benefits the individual and the department.
9. Effectively instruct department personnel in formal training courses or provide support to the central office training.
10. Actively participate and support team activities.

Proficiency Verification

1. The employee shall submit documents, where appropriate, supporting successful completion of 9 out of 10 tasks.
2. The TSC Delivery Engineer will formally interview the employee and review documents submitted by the employee.
3. The employee will be verified as proficient for this Technical Skill is the supervisor determines that the employee has successfully performed nine or more of the Technical Skill tasks.
4. *The TSC Delivery Engineer will email C&T's Technical Training Unit of the employee's proficiency for this Technical Skill.*

Verification of Continued Proficiency:

Prior to the end of the proficiency verification period (annually), the TSC Delivery Engineer will review the Technical Skill tasks with the employee to determine if the employee is continuing to successfully perform the tasks. If the Delivery Engineer determines the employee is successfully performing nine or more of the tasks, the employee will be verified as proficient. *Delivery Engineer will email C&T's Technical Training Unit informing them of the employee's proficiency.*

Training/Resource:

1. Construction Manual, Standard Specifications, Memorandums, Policies, Directives & Union Contracts.

2. MDOT Business Plan.

3. MIOSHA Standards.

4. Leadership Training – for example:
    a) Four Roles of Leadership at MDOT
    b) Dealing with Difficult People
    c) Negotiating Skills
    d) Seven Habits of Highly Effective People
    e) Team Facilitation Skills
    f) Teams: Reaching New Height
    g) What Matters Most
    h) Writing Advantage

Technical Skill #2

EMPLOYEE SAFETY

Description: Observe the requirements of the Department's safety and health initiatives and MIOSHA regulations. Demonstrate safe work practices and safety behavior. Safety behavior is composed of a balance of knowledge, skill, and attitude.

Task List:

1. Employee Safety
    a) Employee Responsibilities
    The employee shall accept safety as a personal responsibility and report new hazards, unsafe conditions, and procedures to their supervisor.

    b) Accident Prevention Plan
    The employee shall be familiar and adhere to the Department's Accident Prevention Program.

    c) Building Safety
    The employee shall be knowledgeable with building safety procedures included on a safety bulletin board in each building.

    d) Personal Protection Equipment Policy
    The employees are to be familiar and in compliance with the Department's Personal Protective Equipment Policy.

2. Safety Programs
    a) MIOSHA
    The employee shall be aware of their rights under MIOSHA regulation and shall review MIOSHA regulations which are applicable to the projects' work operations.

    b) Material Safety Data Sheets
    The employee shall review the contractor's submitted Material Safety Data Sheets and be knowledgeable on impacts of exposure to the products.

c) Michigan Right-to-Know Law (Hazard Communication)
The employee should be familiar with and adhere to the Department's Right-to-Know (Hazard Communication).

d) Respiratory Protection
The employee shall be knowledgeable of and adhere to the Department's guidelines for general respiratory protection.

e) Lead Exposure Compliance
The employee shall be knowledgeable of and adhere to the Department's Interim Lead Exposure Compliance Program. Employee shall ensure that medial reports, such as blood testing and physical testing results, are current prior to performing work in a lead zone.

f) Confined Space Entry
The employee shall be knowledgeable of and adhere to the Department's Interim Written Plan for Confined Space Entry.

Proficiency Verification:

1. The employee shall submit documents supporting that required review requirements were performed and the task list fully completed.

2. If applicable, have the required certifications for workplace sites identified in the Employee Safety Guidelines (Example: Lead Exposure Compliance).

Verification of Continued Proficiency:

1. Maintain the required safety certifications.

2. Attend a minimum of one training session applicable to Technical Skills. Training shall be in addition to training for certifications.

3. Employee shall adhere to the Department's Personal Protective Equipment Policy. Non-compliance will result in loss of Technical Skill.

Measurement:

1. Obtain the required safety certifications.

2. Work zone maintained according to MDOT requirements.

3. Employee following Department Personal Protective Equipment Policy.

Training/Resources:

1. Employee Safety Training: CPR, First Aid, Right-to-Know (Hazard Communication), Hazardous Waste and Hazardous Materials (HAZMAT)

2. Work Zone Training

3. Radiation Safety Training

4. Employee Safety Guideline (Issued September 1, 1994 or successor if issued.)

Technical Skill #3

BRIDGE CONSTRUCTION SURVEYING CONSULTANT/CONTRACTOR STAKING QUALITY ASSURANCE

Description: Perform quality assurance field and computation checks for project staking or documented actual performance of these tasks on an MDOT job.

Task List:

General:

1. Verify or set horizontal control points from previously established witnesses.

2. Verify or set vertical controls from previously established benchmarks.

3. Demonstrate ability to operate survey equipment available which may include level, laser level, EDM and software, total station and hardware.

Substructure:

1. Locate and witness control points, stake or check reference points and lines and benchmarks for structure layout. Check structure location for required vertical and horizontal clearance with roadways, railroads, utilities, etc.

2. Check staking and record or verify unclassified excavation limits and grades.

3. Check piling stakeout and cut-off elevation for piling, if used.

4. Check line and grade prior to pouring sub-structure units (footings, columns, pier caps).

5. Check position dowel layouts.

Superstructure:

1. Reset or verify reference lines when necessary.

2. Check and verify, if necessary, contractor's submitted beam shots and deck grade computations, including screed and bulkhead grades.

3. Check haunch, fascia and bulkhead grade.

4. Check finishing equipment grades, including rails, joints, and bulkheads.

Underclearance:

1. Measure and record structure clearances.

Proficiency Verification:

1. Documented and demonstrated ability of tasks for:

   1 Structure > 2 Span
   2 Structure < 1 Span

2. Provide documentation supporting quality assurance field and computations were performed and that the minimum number of checks were taken.

Verification of Continued Proficiency:

1. Attendance at continuing education and training classes.

Measurement:

1. Oral interview indicates employee can perform tasks identified in task list.

2. Project documentation review.

Training/Resources:

1. Construction Manual Subsection 104
2. Standard Specification for Construction
3. Supplemental and Special Provisions
4. Survey I & II or college equivalent

Technical Skill #4

PROJECT CONTROL STAKING
MDOT/CONSULTANT STAKING

Description: Demonstrate ability to either establish horizontal and vertical control points or to verify consultant/contractor staking.

Task List:

1. Verify or set horizontal controls points from previously established witnesses.

2. Verify or set vertical controls from previously established bench marks.

3. Demonstrated ability to operate survey equipment available which may include level, laser level, EDM and software, the theodolite, total station and hardware.

Proficiency Verification:

1. Effective on-the-job performance of all tasks on:

   Quality Assurance: 1 Project with curve
   MDOT Staking: 1 Project
2. Provide documentation supporting tasks were completed under your guidance, including all field books and documentation.

3. Provide documentation supporting quality assurance field and computation checks were performed and that the minimal number of required checks were taken.

4. Survey I, II or college equivalent.

Verification of Continued Proficiency:

1. Effectively perform required tasks on assignments.

Measurement:

1. Oral interview indicating employee can perform tasks identified in tasks list.

2. Project document review.

Training/Resources:

1. Construction Manual Subsection 104

2. Standard Specification for Construction

3. Supplemental and Special Provisions

Technical Skill #5

ROAD CONSTRUCTION STAKING
MDOT/CONSULTANT/CONTRACTOR STAKING

Description: In charge of crew performing road construction staking or perform quality assurance field and computation checks for project staking on consultant/contractor staking project(s).

Task List:

1. Stake Centerline
   Verify or establish control points from previously established witnesses. Stake or verify centerline tangent and curves.

2. Subgrade Verification
   Verify or establish subgrade stakes and provide checking of grade sheets, computations and field books, including benchmark checks.
   a) Slope Stakes
   b) Subgrade Stakes
   c) Normal Section
   d) Full Super
   e) Super Transitions
   f) Undercut Stakes
   g) Clearing Stakes

3. Pavement Stakes
   Verify or establish pavement stakes for concrete or bituminous paving. Verify or prepare field books from previously prepared plans, grade sheets, and other data. Reset reference lines if necessary, stake lien and grade. Prepare or review field books.

4. Drainage Stakes
   Verify or establish staking for two of the work items listed below. Task work includes preparing or reviewing field books from previously checked plans, grade sheets and other data, reviewing staked offset with contractor's supervisor, staking or verifying grade, alignment, and locations. Periodically check flow lines when necessary to meet field conditions.

a) Culverts
b) Sewers
c) Subsurface Drains
d) Underdrains and Outlets

5. Miscellaneous Staking
   Verify or establish staking for concrete curb and gutter and two of the miscellaneous staking items listed below. Task work includes preparing or reviewing field books from previously checked plans, grade sheet and other data, reviewing staked offset with contractor's supervisor, staking or verifying grade, alignment and locations, such as;
   a) Curb & Gutter
   b) Sidewalk
   c) Water Mains
   d) Retaining Walls
   e) Sound Walls
   f) Guardrail – verify only
   g) Sign Structures
   h) Signs – verify only

6. Muck Stakes
   Verify or establish muck stakes and provide checks of grade sheets and plan computation checks.

7. Earthwork
   Verify or take original, intermediate and final cross-sections.

Proficiency Verification:

Quality Assurance: 1 Project of at least 1 mile with a curve
MDOT Staking: 1 Project

1. Provide documentation supporting 5 of 7 tasks were completed under your guidance, including all field books and documentation.

2. Provide documentation supporting quality assurance field and computation checks were performed and that the minimum number of checks were taken.

3. Survey I & II or college equivalent.

Verification of Continued Proficiency:

1. Attendance at continuing education and training classes.

Measurement:

1. Oral interview indicating employee can perform tasks identified in task list.

2. Project documentation review.

Training/Resources:

1. Construction Manual Subsection 104

2. Standard Specifications for Construction

3. Supplemental and Special Provisions

Technical Skill # 6

PROJECT SUPPORT & DOCUMENTATION

Description: Finalization of construction contracts, expertise in project documentation, and assurance of prompt payment to contractors.

Task List:

1. Final Estimates generated within an acceptable time frame and sent to the Bureau of Finance. The Final Estimate time frame for generation will be established by the TSC Delivery Engineer.

2. Resolve contract differences between contractor and MDOT to greatest possible extent.

3. Demonstrated familiarity with MDOT project claims process. Prepare claim packages as required.

4. Oversee consultant contracts or provide assistance in finalizing state and local units of government contracts.

5. Demonstrated familiarity with material & testing requirements for contract pay items (Material Sampling Guide, Visual Inspection Limits, etc.).

6. Demonstrated familiarity with construction pay item requirements for contract pay items (Construction Manual, Bureau of Highway Instruction Memorandums, current Specification Book, etc.).

7. Demonstrated familiarity with contract support documentation (Biweekly Progress Reports, correspondence, plan revisions, etc.).

8. Ability to maintain computer expertise. Familiarity with Field Manager and other computer programs (attend training sessions, committees, etc.).

9. Demonstrated familiarity with reading and interpreting construction plans, inspection reports, and survey documentation.

10. Demonstrated proficiency in completing all required documentation for project records and posting in a timely manner.

11. Process estimates on a biweekly basis and meet estimate submission deadlines to the Bureau of Finance.

12. Process additional estimates for special situations or large dollar volume of work as required.

13. Send copies of estimates to subcontractors as requested.

14. Communicate with contractors regarding deficiencies that cause payment to be held up.

Proficiency Verification:

1. Documentation and demonstration ability in 12 of 14 task list areas. Task 1 is mandatory.

2. Effective on the job performance of required tasks for on project with 25 or more pay items.

Verification of Continued Proficiency:

1. Attendance at continuing education and training classes.

2. Ongoing proficiency in finalizing projects.

Measurement:

1. Maintain records at a level as directed by the Project/Resident/Delivery Engineer.

2. Target goal of zero late estimates submitted to Bureau of Finance.

3. Ongoing proficiency in finalizing projects.

Training/Resources:

1. Construction Manual
2. Standard Specification for Construction
3. Supplemental and Special Provisions
4. Material Sampling Guides
5. Bureau of Highway Instructional Memorandums

Technical Skill #7

INSPECT EARTHWORK

Description: Checking grades and shaping, inspect restoration, inspect and coordinate utility relocation, inspect the placement and testing of subbases and embankments.

Task List:

1. Identify and locate project limits and verify project staking.
2. Inspect original ground and topsoil removal.
3. Verify materials used for subbase and embankment and material testing.
4. Verify or take moisture density tests.
5. Inspect excavations, embankments and subbases for material, density control, and grade.
6. Review undercut areas with Project Engineer or Regional Soils Engineer and set limits.
7. Document undercut volumes.
8. Inspect peat excavation and swamp backfill operations.
9. Inspect final trim, slope restoration, and project clean-up.
10. Coordinate utility relocations.
11. Inspect clearing and tree trimming removal operations.
12. Verify need for the inspect erosion control devices for installation and maintenance.

13. Inspect project restoration.
    - Seed, Mulch, Fertilizer
    - Sodding
    - Permanent Erosion Controls

14. Perform storm water operator duties as required by NPDES permit conditions.

Proficiency Verification:

1. Effective on the job performance of 11 of 14 tasks on 2 lane miles of new construction, complete reconstruction or widening for 1 or more lanes on each side of roadway. Technician must be in charge of earthwork operations for experience to qualify.

2. MDOT Density Technology Certification.

3. Michigan Certified Aggregate Technician.

4. Completion of MDEQ Soil Erosion and Sedimentation Control training. A passing test score is required.

5. MDEQ Construction Site Certification Storm Water Operator.

Verification of Continued Proficiency:

1. Maintain required industry certifications.

2. Effectively perform all tasks on assignment. Document a minimum of one project continuously meeting measurement requirements as verified by supervisor.

3. Attend a minimum of 1 training session applicable to the Technical Skills during previous proficiency verification period.

Measurement:

1. Current industry certifications.

2. Obtain and maintain MDEQ Construction Site Certification Storm Water Operator.

3. Successfully complete MDEQ Soil Erosion and Sedimentation Control training.

4. Specified materials and procedures are used with no major documentation omissions.

5. No major soil erosion deficiencies and less than 3 minor deficiencies on assigned project.

6. On-site verification by the Delivery Engineer of methods and materials to ensure conformance to plans and specifications.

7. Timely inspection and documentation of soil erosion conditions (NPDES inspections).

Training/Resources:

1. MDOT Density Technology program

2. Michigan Aggregate Technician program

3. MDOT Construction Manual

4. MDEQ Storm Water Operator program

5. MDEQ Soil Erosion and Sedimentation Control program

6. MDOT Standard Plans and Specifications

Technical Skill #8

INSPECTION OF TEMPORARY AND PERMANENT EROSION CONTROLS

Description: Inspect the installation, maintenance and operation of temporary and permanent erosion controls.

Task List:

1. Review project plans, MDEQ permits, United States Army Corps of Engineers (USACE), and NPDES permits for erosion and sedimentation control measures.

2. Review site for potential erosion and sedimentation.

3. Advise contractor of measures to be implemented prior to construction activities. Stake or verify locations.

4. Document erosion controls installed and inspected as required by MDOT guidelines, specifications and standard plans; project permits and regulatory agencies. Document failures in controls, corrective actions and NDPDES inspections.

5. Ensure timely construction of temporary permanent controls.

6. Inspect the maintenance of controls installed.

Proficiency Verification:

1. Effective on the job performance of all tasks on:

   a) 1 major project greater than $5 million
      or
   b) 3 projects with NPDES Permits with a minimum of 3 types of erosion control

2. MDEQ Construction Site Certification Storm Water Operator.

3. Completion of MDEQ Sedimentation and Erosion Control training. A passing test score is required.

Verification of Continued Proficiency:

1. Technician maintains required certifications.

2. Supervisor verification of effective performance of all assigned tasks with no major deficiencies and less than 3 minor deficiencies noted on any project reviewed by the MDEQ, USACE, Lansing or Region personnel.

3. No USACE or MDEQ violations occur on assigned projects.

Measurement:

1. Employee obtains required certifications.

2. All assigned projects have no major deficiency and less than 3 minor deficiencies during project reviews.

3. On-site verification review by Delivery Engineer designee to ensure that installation and maintenance of controls meet contract plans, standard plans, specifications and project permits.

Training/Resources:

1. MDEQ Soil Erosion and Sedimentation Control program

2. MDEQ Storm Water Operator program

3. MDOT Construction Manual

4. MDEQ, USACE, and NPDES Permits

5. MDOT Standard Plans and Specifications

Technical Skill #9

INSPECT DRAINAGE FEATURES

Description: Inspect installation of drainage items to include pipe culverts, sewers, ditching and box or slab culverts.

Task List:

1. Review project plans and permits for erosion and sedimentation control measures.
2. Ensure stake-out is in accordance with plans and meets field conditions.
3. Inspect drainage and backfill materials for conformance with specifications.
4. Ensure erosion controls are in place prior to work and permanent controls are completed.
5. Inspect excavation for safety and ensure correction prior to entering excavations.
6. Review installations and backfill fro correct procedures and conformance with plans and specifications. Verify installations using mandrel tests or video inspections as required.
7. Verify or take moisture/density tests.
8. Verify or complete concrete test.
9. Inspect concrete placement.
10. Verify drainage from ROW and adjacent properties.
11. Review Materials Certification.

Proficiency Verification:

1. Effective on the job performance of 8 of 10 tasks on:

    a) Major project greater than $5 million or with culverts or 3 grading projects with culvert and with drainage features (culverts, etc.).

    b) Certified concrete testing.

    c) Certified moisture/density testing.

    d) MDEQ Soil Erosion and Sedimentation Control training. A passing test score is required.

    e) NPDES Storm Water Operator Certification.

Verification of Continued Proficiency:

1. Maintain required certifications.

2. Effectively perform all tasks on assignment. A minimum of one project continuously meet measurement requirements as verified by supervisor.

3. Attend a minimum of one training session applicable to the element during previous certification period. Training session shall not be a class for testing re-certification.

Measurement:

1. Obtain required certifications.

2. On-site verification review by Delivery Engineer designee to ensure that installation, materials, and erosion control meets contract plans, standard plans and standard specifications.

Training/Resources:

1. MDEQ Soil Erosion and Sedimentation Control program

2. MDEQ Certified Storm Water Operator program
3. ACI or MCPA Level I Concrete Testing program
4. MDOT Density Technology Control program
5. Michigan Aggregate Technician Program
6. MIOSHA Excavation Standards
7. MDOT Standard Plans and Specifications

Technical Skill #10

INSPECT HMA SURFACING

Description: Inspect the preparation of existing pavement, equipment used, bituminous mixtures and paving operations for Hot Mixed Asphalt.

Task List:

1. Review plans and proposal.
2. Typical cross section.
3. Mixture and binder types.
4. Traffic control.
5. Inspect base preparation
    a) Joint repairs
    b) Hand pitching
    c) Cold milling
    d) Adjusting structure covers
    e) Bond coat application
6. Inspect equipment
    a) Paver automation and grade referencing.
7. Screed, augers and extensions.
8. Inspect paving.
9. Verify mix design approval.
10. Mix temperature.
11. Construction of transverse, longitudinal joint, and edges. Pavement texture (segregation, flushing).

12. Inspect rolling.

    a) Roller marks, checking.
    b) Layout core locations.

13. Ride quality (not required on all jobs).

14. Inspect measurement.

15. Verify computations.

16. Inspect safety

17. Shoulder drop off.

18. Sign and barricades, arrow bar.

19. Temporary/permanent pavement markings.

20. Shoulder gravel.

21. Warranty administration.

22. Monitor QC plan for workmanship.

23. Perform periodic checks on plan for conformance.

24. Become qualified for sampling HMA behind the paver.

Proficiency Verification:

1. Affective performance of required tasks on 1 project which contains 10, 000 tons of bituminous mixture.

2. Qualified for sampling HMA behind the paver.

3. MDOT bituminous paving inspection school.

4. On-site observation.

Verification of Continued Proficiency:

1. Attendance at continuing education and training classes.
2. Supervision verification of effective performance of assigned tasks.
3. Successful completion of re-qualification for sampling behind the paver.

Measurement:

1. Provide documentation of completed tasks.
2. Demonstrated ability to work independently.

Training/Resources:

1. Michigan Construction Manual
2. Standard Plans and Specifications
3. MDOT Bituminous Paving Inspection School
4. Special Provisions

Technical Skill #11

INSPECT CONCRETE PAVEMENT AND MISCELLANEOUS CONCRETE CONSTRUCTION

Description: In charge of the inspection of pavement preparation and misc. preparation and the inspection of Concrete roadway items. Review plans, proposals and QA/QC requirements to determine approved type of mix design. Review and verify concrete plant certification. Check specifications to determine proper equipment and placement procedures relating to the activity in which concrete pavement and/or miscellaneous concrete construction are involved.

Observe operation and see that necessary adjustments are made to ensure proper consolidation, surface texture, crown, cure and placement of material to the proper line and grade as it relates to pavement or misc. concrete construction.

Task List: (Refer to Construction Manual for details.)

1. Review plans specifications and special provisions.
2. Inspect base preparation and pavement removal.
3. Inspect joint installation (pavement patching).
4. Inspect equipment.
5. Review contractor's QC plan.
6. Review QA requirements.
7. Verify tested materials.
8. Verify permit to place.
9. Verify concrete placement.
10. Perform yield checks.
11. Inspect night headers.

12. Document proper quantities and repairs.

13. Inspect equipment operation.

14. Inspect surface.

15. Inspect hand finishing and edging.

16. Inspect texturing.

17. Inspect stenciling of stations.

18. Inspect curing methods and operation.

19. Identify and inspect repair of damaged areas for additional lanes.

20. Inspect joint sawing and sealing.

21. Verify testing of lane ties for pull out strength.

22. Check for broken tie bars.

23. Inspect placement of expansion anchors for lane ties.

24. Compute, review and check ride quality measurements.

25. Inspect cold weather protection if applicable.

26. Inspect safety.

27. Warranty Administration (for Warranty projects).

28. Industry certification in the American Concrete Institute or Michigan Concrete Paving Association Concrete Testing, Level 1 program.

Proficiency Verification:

1. Successful completion of MDOT inspection school.

2. Industry certification in the American Concrete Institute of Michigan Concrete Paving Association Concrete Testing, Level 1 program.

3. Successful on the job completion of 21 of 28 tasks and required documentation.

4. Approval of supervisor of the job performance.

5. Passing of on-site practical exam.

Verification of Continued Proficiency:

1. Maintain required industry certifications.

2. Effectively perform all tasks on assignment.

3. Acceptable Independent Assurance Tests during the industry certification period (1 required test yearly).

4. Successful completion of industry re-certification in the American Concrete Institute of Michigan Concrete Paving Association Concrete Testing, Level I Program.

5. Re-examination (written and practical) at MDOT Concrete Paving Inspection School.

Measurement:

1. Passing grade on all required courses.

2. Experience guidelines 20 workdays.

3. Provide documentation of completed tasks.

4. Verification of effective performance (documentation and inspection) on required tasks.

5. Continuing education in associated concrete paving schools.

Training/Resources:

1. Construction Manual
2. Standard Plans and Specifications
3. Special Provisions
4. QA/QC for Concrete School
5. Industry schools
6. NHI classes and continuing education
7. MDOT Concrete paving inspection school
8. Video demonstration tapes

Technical Skill #12

STRUCTURES

Description: Demonstrated proficiency in bridge inspection procedures, techniques, specifications, and documentation.

Task List:

1. Inspect bridge joints (formed, sawed, expansion) for correct type, placement, and installation.

2. Inspect pile driving operations. Review plans, specifications and special provisions as required. Inspect materials, check welder certification and pile placement. Inspect driving operation and pile splicing operation. Mark, check and inspect pile cut-offs. Inspect test pile driving if required.

3. Inspect substructure and superstructure forming and steel reinforcement placement. Verify that contracted work is performed according to plans, specifications, special provisions, and shop drawings. Inspect anchor bolts, dowel placement, finishing and curing, waterproofing, and slope protection.

4. Inspect structural steel erection. Review plans, specifications, special provisions and shop drawings. Identify anchor bolt and bearing plat layout, erection sequence, camber diagrams, shear developer details and condition of concrete surface under bearing plates. Inspect structural steel placement (fit of beams, diaphragms, rockers, and bolt hole alignment). Inspect shear developer installations and prepare all necessary reports.

5. Inspect field painting of structural steel. Review plans, specifications, and special provisions as required. Inspect cleaning and coating in accordance with specifications. Inspect protection of environment, traffic and adjacent facilities.

6. Prepare appropriate documentation.

Proficiency Verification:

1. Documented and demonstrated ability in 4 of 6 tasks.

2. Effective on the job performance of all tasks on:

    a) Two projects less than $5 million or
    b) 1 project greater than $5 million

3. Attendance at continuing education and training classes.

Verification of Continued Proficiency:

1. Attendance at continuing education and training classes.

2. For structures, documented effective on the job performance of 4 out of 6 tasks on one project every 5 years.

Measurement:

1. Oral interview indicates employee can perform tasks identified in task list.

2. Project documentation review.

Training/Resources:

1. Construction Manual

2. Standard Specifications for Construction

3. Supplemental and Special Provisions

Technical Skill #13

INSPECT PERMANENT TRAFFIC CONTROL DEVICES

Description: Inspect the placement of permanent signs, pavement markings, guardrail and signals.

Task List:

1. Review and verify plans, special provisions, MDOT manuals and standard plans.

2. Review and verify staking for signs, poles, guardrail, and foundations to ensure conformance with plans or standard plans. Verify that the mark-out for pavement markings is in accordance with MDOT special details.

3. Coordinate utility relocations for future signal construction projects.

4. Verify materials.

5. Ensure effective traffic control measures are used.

6. Inspect the placement of signals, signs, sign foundations and pavement markings to ensure conformance with plans, specifications and visibility (no obstructions, etc.).

7. Schedule inspections and prepare physical inventory reports as required by Region or Lansing directives.

8. Inspect guardrail installation. Review plans, specifications, and special provisions as required. Check condition of materials. Inspect anchoring and driving of posts. Inspect erection of panels, including bolting, washers, lapping and reflective devices and installation of guardrail anchorage. Prepare complete and timely reports.

9. Review and conform proper Material Certification.

Proficiency Verification:

1. Effective on the job performance of all applicable tasks on projects which total:

    a) 6.10 miles of sign (re)placement including a minimum of 1 foundation mounted sign.
    b) 5 signalized intersections.
    c) 8.3 miles of newly established pavement marking including symbols and legends.
    d) 11 separate runs of guardrail.

Verification of Continued Proficiency:

1. Effective on the job performance of all tasks on:

    a) 1 project with sign (re)placement
    b) 1 project with signal (re)placement
    c) 2 projects with pavement marking (re)placement

2. Documented attendance at training sessions for permanent traffic control devices during certification period.

3. For guardrail, documented effective on the job performance of tasks on one project every five years.

Measurement:

1. Documented attendance at training sessions (with passing score).

2. Supervisor verifies effective performance regarding documentation and inspection.

Training/Resources:

1. Michigan Manual of Uniform Traffic Control Devices

2. MDOT Guidelines for Signing on State Trunkline Highways

3. MDOT Pavement Marking Typical Plans

4. MDOT Standard Plans

Technical Skill #14

TEMPORARY TRAFFIC CONTROL SIGNS, DEVICES AND OPERATION

Description: Coordinate contractor temporary traffic control operations and inspect temporary traffic control devices and signs.

Task List:

1. Evaluate the contract plans and specifications to ensure safe and efficient traffic movement, recommend changes as appropriate to the Engineer for approval, and implement the contract requirements with any approved modifications.

2. Ensure contractor compliance with contract requirements for signs, markings and devices. Facilitate and document corrective actions.

3. Inspect, evaluate, propose necessary modifications to, and document the effectiveness of traffic control devices and operations immediately after initial set-up stage changes, daily set-up, crash occurrences within CIA, and removals at end of project.

4. Ensure weekly night inspections are conducted.

5. Verify that all traffic regulators (flaggers) have been trained and all flagging operations are being conducted in accordance with the Departments requirements.

6. Review speed limit signing to ensure correct speeds are displayed and permanent speed limit signs are properly covered.

7. Ensure inapplicable permanent signs are covered or removed.

8. Verify contractor documentation, logs and reports.

9. Monitor traffic flows, delays and safety. Facilitate and document corrective action.

10. Inspect temporary roads and road surfaces for safety. Facilitate improvements required to maintain in satisfactory conditions.

11. Attend construction work zone traffic control reviews performed by Central Office, Regional, or TSC personnel. Respond to deficiency reports and implemented corrective actions.

Proficiency Verification:

1. Effective on the job performance of all tasks on:

   a) 2 projects less than $5 million or
   b) 1 project greater than $5 million

2. Attend construction work zone safety workshop.

3. Traffic Regulation (flagger) Training.

Verification of Continued Proficiency:

1. Attend a minimum of one Construction Work Zone Traffic Control workshop, class or seminar.

2. Actively participate in work zone reviews as a team member or as the project responsible technician.

3. Construction work zone reviews identify no major deficiencies on assigned projects.

Measurement:

1. Construction Work Zone Reviews of Project have no major deficiencies and fewer than 3 minor deficiencies.

2. Review of project records finds no required contract documentation omissions.

3. Investigate motorist complaints. Resolve or provide recommendation to the engineer.

4. Contractor documentation conforms to specification requirements.

Training/Resources:

1. Par VI of the current Michigan Manual on Uniform Traffic Control Devices

2. Contract plans, proposal, traffic control plans and special provisions, including applicable standard plans

3. MDOT's Traffic Regulators Instruction Manual and video tape

4. MDOT's Standard Specifications for Construction (Section 812 (1996) or Section 6.31 (1990) as appropriate)

5. ATSSA's Quality Standards for Work Zone Traffic Control Devices booklet

6. Construction Manual

7. Quality Standards or Work Zone Traffic Control Devices

8. American Traffic Services Association (ATSSA) Certification

9. MDOT Standard Plans and Specifications

Technical Skill #15

SOILS

Description: Demonstrate the ability to map soil profiles and classify soils according to the pedological classification system. Conduct soil and rock borings and corings to define foundation conditions.

Task List:

1. Operate the necessary equipment to obtain soil and rock samples.
2. Select site locations to obtain needed soil samples and foundation condition information.
3. Map soil profiles and classify soils according to the pedological classification system.

Proficiency Verification:

1. Effective on the job performance of all tasks.

Verification of Continued Proficiency:

1. Field review by appropriate personnel.
2. All soil samples classified properly.
3. All soil profiles mapped properly.

Training/Resources:

1. Soil classification class or on-the-job training.
2. Equipment operation on-the-job training.
3. Sample location on-the-job training.

Technical Skill # 16

UTILITY PERMIT

Description: Demonstrate the ability to perform field investigations and inspections for permitted activities such as: billboards, signs, bore and jacks, driveways, utility installation and relocation, local agency infrastructure project, etc.

Task List:

1. Perform the necessary construction inspection.
2. Review traffic and safety layout and control.

Proficiency Verification:

1. Approved effective on-the-job performance of all tasks.

Verification of Continued Proficiency:

1. Ability to effectively perform all tasks.

Measurement:

1. Approval of tasks performed by the supervisor.

Training/Resources:

1. Successful completion of related Technical Skills
2. Billboard and sign requirements training
3. Bore and Jack installation training

Technical Skill #17

TRAFFIC COUNTS

Description: Demonstrate the ability to perform traffic counts for speed studies, traffic control upgrades, or signal warrants.

Task List:

1. Obtain the data required.

Proficiency Verification:

1. Effective completion of the task.

Verification of Continued Proficiency:

1. Continued effective ability to complete the task.

Measurement:

1. Employee performs the task to the supervisor's approval.

Training/Resources:

1. Equipment use training
2. Training on data collection required to complete the task

Technical Skill #18

BASIC LEVEL – DESIGN SURVEY

Description: Demonstrate the ability to plot original survey data in the form of topography, profiles, and cross sections.

Task List:

1. Plot Right-of-Way and property boundaries from survey data and Right-of-Way books.
2. Compute areas, volumes, and unit conversions.
3. Reduce survey notes.

Proficiency Verification:

1. Demonstrate the ability to perform all tasks with supervisor approval.

Verification of Continued Proficiency:

1. Maintain the ability to perform this Technical Skill.

Measurement:

1. Employee performs the task to the supervisor's approval.

Training/Resources:

1. Survey Training
2. Plan Reading Training

Technical Skill #19

JOURNEY LEVEL –DESIGN SURVEY

Description: Demonstrate the ability to complete traverse slope-stake lines, earthwork volumes, cross section templates, and vertical and horizontal alignment data.

Task List:

1. Develop plans to include Right-of-Way property boundaries, utilities locations, contours, soils information, topography, geometrics, alignment and grades, typical cross sections, and other design survey information.

2. Prepare Project Estimate using quarterly unit prices.

3. Use IGRDS, PPMS, TransPort, MPINS, CAICE, and data collectors.

4. Coordinate field reviews and pickup surveys.

Proficiency Verification:

1. Approved completion of tasks.

Verification of Continued Proficiency:

1. Ability to effectively perform all tasks.

Measurement:

1. Completion of tasks to the supervisor's approval.

Training/Resources:

1. Completion of Technical Skills, Basic Design Survey

2. Survey Training

3. Computer Program Training

4. Survey Equipment Training

MICHIGAN DEPARTMENT OF CIVIL SERVICE
JOB SPECIFICATION

CONSTRUCTION TECHNICIAN (TRANS)

JOB DESCRIPTION

Employees in this job participate in and oversee a variety of quality control inspection activities designed to ensure that highways, bridges, and allied transportation facilities conform to the plans and specifications contained in contractual construction agreements.

There are five classifications in this job.

Position Code Title – Construction Technician (Trans)-E

Construction Technician 8
This is the entry level. The employee works in a training capacity performing a range of transportation construction quality control inspection assignments while receiving close supervision.

Construction Technician 9
This is the intermediate level. The employee works in a developing capacity with increased responsibility for performing a range of transportation construction quality control inspection assignments.

Construction Technician E10
This is the experienced level. The employee performs a full range of transportation construction quality control inspection assignments using considerable independent judgment in making decisions in order to apply guidelines with considerable latitude to a variety of work situations.

Position Code Title - Construction Technician (Trans)-A

Construction Technician 11
This is the advanced level. The employee serves as a first-line lead worker, assigning and directing the work of lower-level technicians, or as a senior worker, is responsible for the most complex transportation construction quality control inspection assignments. Senior-level employees perform complex assignments beyond those expected at the experienced level which have been approved by Civil Service.

Position Code Title - Construction Technician (Trans)-2A

Construction Technician 12
There are two distinct classification concepts at this level. In the first instance, the employee serves as a technical assistant to a delivery engineer and also as a second-line lead worker over multiple construction crews. Or, the employee serves as a staff specialist utilizing specialized technical knowledge in performing highly complex

construction technician assignments involving authority for an assigned program. Staff specialist positions are one of a kind, have sole and full-time responsibility for an assigned program area, and are recognized by Civil Service.

NOTE: Employees generally progress through this series to the experienced-level based on satisfactory performance and possession of the required experience.

JOB DUTIES

NOTE: The job duties listed are typical examples of the work performed by positions in this job classification. Not all duties assigned to every position are included, nor is it expected that all positions will be assigned every duty.

Inspects a complete phase of construction, such as substructure concrete placement, substructure forming, and steel placement, retaining walls, and concrete or bituminous roadways.

Performs instrument work, such as computing and/or staking substructure lines and grades, foundation piles, structure excavation limits, curbs and gutters, sewers and underdrains, culverts, box culverts and major drainage structures, excavation and embankment grades, cross sections and slopes, rights-of-way for road or bridge layouts, vertical and horizontal alignments for roadways, and vertical controls for drainage.

Performs gradation testing, materials weighing, and inspection on such construction items as: tree and stump removal, culverts, sewers and drainage structures, shaping and depth of aggregate base or surface course, placement of guardrail, sodding and seeding, erosion control, and pavement patching.

Inspects placements of traffic signs, barricades, and flag persons for safe flow of traffic through construction area.

Inspects grade preparation for bituminous or concrete paving.

Checks tested materials and pay quantities in preparation for posting for payments.

Performs instrument work such as: beginning and advanced rodman, final measurement of construction items, setting grades, staking fences, and guardrails and clearing limits.

Performs various tests on concrete or bituminous paving materials to ensure quality control specifications are met.

Confers with personnel employed by contractors, public utilities, city and county engineering departments, or consultants regarding coordination of construction project activities.

Performs office technician work such as: reviewing and making out daily reports, plans, proposals, specifications, construction manuals, and contract documents; setting up, reducing and checking field books; plotting cross sections; computing areas and volumes; preparing field books and sketches for land clearings; setting up and maintaining engineering file systems; and making contractor's payments.

Prepares field book data and sketches for drainage structures, earthwork and grades, curb and gutter, sewage facilities, utilities relocation, and rest area facilities.

Performs the inspection work of utilities relocation, rest area sewage facilities, structural steel erection, dewatering operations, and cofferdams, as required.

Stakes buildings, rest area facilities, and sheet pile layouts.

May inspect bridge deck forming, underwater bridge repair, sandblast cleaning operations, and bridge painting operations.

Trains seasonal and other employees in surveying practices and inspection activities.

Performs related work appropriate to the classification as assigned.

Additional Job Duties

Construction Technician 11- (First-Line Lead Worker)
Oversees the work of other construction technicians by making and reviewing work assignments, establishing work priorities, coordinating activities in the work area, and resolving problems related to the work.

Participates in, and oversees the inspection of such construction as foundations, buildings and related rest area facilities; superstructure preparation and resteel placement, forming and concrete placement; portland cement concrete paving, grading; and test pile driving.

Construction Technician 11 (Senior Worker)
Regularly performs transportation construction quality control inspection activities recognized as the more difficult and complex assignments.

Construction Technician 12 (Technical Assistant and Second-Line Lead Worker)
Oversees the work of multiple construction crews by making and reviewing work assignments, establishing work priorities, coordinating activities in the work area, and resolving problems related to the work.

Serves as the technical assistant to a delivery engineer.

Assists the delivery engineer in staffing projects, determining equipment needs, and controlling construction engineering costs.

Oversees the technical functions and daily activities of assigned projects.

Prepares work orders and contract modifications for work item changes.

Construction Technician 12 (Staff Specialist)
Exercises independent authority and responsibility for an assigned program area.

Serves as a recognized expert within a program area, and provides technical assistance to other departmental staff.

JOB QUALIFICATIONS

Knowledge, Skills, and Abilities

NOTE: Some knowledge in the area listed is required at the entry level, developing knowledge is necessary at the intermediate level, considerable knowledge is required at the experienced level, thorough knowledge is required at the advanced level, and extensive knowledge is required at the second advanced level.

Knowledge of terminology used in construction.

Knowledge of source documents such as proposals, plans, specifications, standard plans, supplements, memorandums, and manuals.

Knowledge of mathematics including algebra, geometry, and trigonometry.

Knowledge of proper use of survey equipment, grade and line, temperature corrections in chaining, survey accuracy requirements, documentation requirements, and field notes requirements.

Knowledge of the proper use of a variety of testing equipment used in transportation construction.

Knowledge of personal and construction safety practices on highway construction projects.

Skill in the use of a variety of testing equipment.

Skill in the use of surveying instruments and equipment.

Ability to compute areas and volumes.

Ability to work on high structures, carry equipment and materials, walk about rough terrain of construction projects, and stand for long periods of time.

Ability to inspect selective clearing and topsoil removal.

Ability to inspect aggregate yield, shaping, placing, compacting, priming, and sealing.

Ability to inspect portland concrete forming, density, joint sealing and finishing, foundation piling, concrete curb and gutter, bituminous surfacing, and shoulders.

Ability to inspect traffic sign and guardrail placement and maintenance.

Ability to inspect landscaping, seeding, sodding, slopes, erosion, and ditches.

Ability to inspect temporary roads.

Ability to inspect and identify project safety requirements.

Ability to oversee work in progress.

Ability to work under extreme weather conditions, and environmental conditions of work site.

Ability to communicate effectively.

Ability to maintain favorable public relations.

Additional Knowledge, Skills and Abilities

Construction Technician 11 (Lead Worker)
Ability to explain instructions and guidelines to others effectively.

Ability to organize and coordinate the work of the unit.

Ability to determine work priorities and assign work to employees.

Construction Technician 11 (Senior Worker)
Ability to perform the most complex construction technician assignments.

Construction Technician 12 (Technical Assistant and Second-Line Lead Worker)
Ability to explain instructions and guidelines to others effectively.

Ability to organize and coordinate the work of multiple projects.

Ability to determine work priorities and assign work to first-line lead workers.

Ability to advise and assist the delivery engineer in relation to on-going or proposed construction projects.

Construction Technician 12 (Staff Specialist)
Ability to organize and operate an assigned program area.

Ability to adapt new technology and methods to increase program effectiveness.

Working Conditions

Work is performed in field locations and may require movement from one location to another, as well as exposure to working along busy highways and adverse weather conditions.

Some jobs require work on high structures; exposure to hazardous work environments, travel, and work in tunnels and crawl spaces.

Depending on seasonal workloads and/or agency need, employees may be temporarily assigned some duties typical of other Civil Technician-related classifications.

Physical Requirements

The job duties require an employee to: bend and reach for extended periods of time, bend or stoop in confined spaces, climb ladders, walk for extended periods of time, work under stressful conditions, and move heavy objects.

Education

Possession of an associate's degree in Civil Technology, Construction Technology, or Surveying Technology or related degree.

OR

Completion of 90 term (60 semester) college credit hours to include 12 term (8 semester) credit hours of mathematics and 36 term (24 semester) credit hours in any combination of course work in at least three of the following areas: structures, materials, soils, hydrology, surveying, drafting/design, bituminous, concrete, aggregates, chemistry, physics, geology, environmental science, computer science, or thermodynamics.

Experience

Construction Technician 8
No specific type or amount of experience is required.

Construction Technician 9
One year of experience performing technical quality control inspection activities related to the construction of highways, roads, bridges and allied transportation facilities equivalent to a Construction Technician 8.

Construction Technician E10
Two years of experience performing technical quality control inspection activities related to the construction of highways, roads, bridges, and allied transportation facilities, including one year equivalent to a Construction Technician 9

Construction Technician 11
Three years of experience performing technical quality control inspection activities related to the construction of highways, roads, bridges and allied transportation facilities, including one year as a Construction Technician E10, and satisfactory completion of one of four industry certifications as described below, under Special Requirements, Licenses, Certifications; and current certification in Storm Water Operator and Soil Erosion and Sedimentation Control.

Construction Technician 12
Two years of experience performing technical quality control inspection activities related to the construction of highways, roads, bridges, and allied transportation facilities as a Construction Technician E10 or one year of experience as an advanced level Construction Technician 11; and, satisfactory completion of two of four industry certifications as described below, under Special Requirements, Licenses, Certifications; and current certification in Storm Water Operator and Soil Erosion and Sedimentation Control.

Alternate Education and Experience

Four years of construction technician experience, or engineering technician experience consisting of materials and testing may be substituted for the associate's degree.

Special Requirements, Licenses, and Certifications

Some positions may require possession of a Commercial Driver's License (CDL) issued by the Secretary of State as required by Public Act 346 of 1988 to operate a designated state vehicle.

Positions performing sampling and testing of highway materials for federal-aid projects on the National Highway System (NHS), subsequent to June 29, 2000, must be performed by qualified technicians, certified in the requisite Bituminous (Hot Mix), Concrete, Density Testing or Aggregate Gradation per a Civil Technician qualification program to ensure compliance with the Quality Assurance Procedures for Construction 23 CFR 637, dated June 29, 1995.

NOTE: Equivalent combinations of education and experience that provide the required knowledge, skills, and abilities will be evaluated on an individual basis.

JOB CODE, POSITION TITLES AND CODES, AND COMPENSATION INFORMATION

Job Code	Job Code Description
CONSTRTCH	Construction Technician

Position Title	Position Code	Pay Schedule
Construction Technician (Trans)-E	CONSTCHE	L32-006
Construction Technician (Trans)-A	CONSTCHA	L32-012
Construction Technician (Trans)-2A	CONTCH2A	L32-013

ECP Group 1
Revised 4/28/05
JMR

TECHNICAL TRAINING COURSES

CERT - MCA CONCRETE - LEVEL 1
(Offered by MCA and MCPA)

To become certified, students must demonstrate their knowledge of the seven field test through both performance and written exams. The students must pass a written exam with a minimum score of 70%. In addition to the ACI core requirements, the Level I student will be introduced to the fundamentals of concrete including: concrete materials, water/cement ratio, curing, and hot/cold weather concreting. Certification expires 3 years from the year granted. It is the responsibility of the practicing technician to maintain an active certification. The certification is valid for 3 years.

Audience: Technicians working on the NHS system

Prerequisite: None

Course Format: 3 days (the exam will be on the last day)

CERT - MCA CONCRETE - LEVEL II
(Offered by MCA and MCPA)

The Level II certification extends the principles introduced in the Level I course to include aggregates for concrete, mix design theory, strength evaluation, placement/finishing practices, and troubleshooting. The prerequisites for registration include current Level I certification, and a resume' of work and/or educational experience. Written Exam: The Level II certification exam follows the three day course and covers the fundamental concepts introduced in the Level I course plus aggregates for concrete, mix design theory, and troubleshooting for concrete. A minimum score of 70% is required to pass. Certification is valid for 3 years.

Audience: Senior Technicians in region labs, instructors

Prerequisite: Level I Certification and a resume of work and/or educational experience

Course Format: 2 days; Course 1 day, Testing 1 day

CERT - AGGREGATE TECHNICIAN TRAINING COURSE
(Offered at Ferris State University)

This intensive course is designed to give candidates the skills and knowledge necessary to pass the Michigan Certified Aggregate Technician Test. The course is composed of both classroom and laboratory instruction. Course topics include MDOT aggregate specifications and Michigan Test Methods; Aggregate stockpiling and sampling techniques; Aggregate testing procedures, mechanical analysis, crush and deleterious material picks; proper test result documentation; American Society for Testing Materials Standards (ASTM). The certification period is 5 years

Prerequisite: None

Course Format: 4 days

QUALIFICATION - MICHIGAN BITUMINOUS QC/QA TECHNICIAN QUALIFICATION PROGRAM
(Offered at Ferris State University)

This is a comprehensive testing process to verify the qualifications of individuals involved with quality control or quality assurance testing. **THIS IS NOT A TRAINING COURSE.** The contents of the program include: review of related specifications, required documentation, sampling and testing procedures; hands on practice of laboratory procedures. This an opportunity for the applicant to become familiar with the laboratory facilities which will be used to administer the practical examination; practical skills examination; and written examination. In order to pass this course and become qualified, the applicant will be have to meet the following requirements: Fulfill the requirements for application; Attend the 4-day program, and achieve a passing score on both the practical skills and written examination. The qualification period is three years.

Prerequisite: Applicants must have a minimum of ten work days of quality control and/or quality assurance sampling and testing experience at a Hot Mix Asphalt plant. Ten complete sets of QC/QA tests must have been performed during this ten work days by the applicant at a Hot Mix Asphalt plant on-site testing laboratory where the mix was produced. (Test performed in any other laboratory setting do NOT quality.) These work days may not be prior to 1997. The "complete set' is defined as the QC/QA tests required by the specification for a sub lot.

Course Format: 4 days

CERT - DENSITY
(Offered at LCC & Ferris State University

This course is designed for technicians and their supervisors who have responsibility for the density control on soil subgrade, aggregate bases, and asphalt surfaces. The course introduces the theory of compaction on various materials, and provides training using the common density control tests, procedures and documentation. Applicants should be individuals who conduct, supervise, or inspect the compaction of soils, bases, and bituminous pavements, such as construction inspectors and superintendents. The certification is valid for 5 years.

Audience: Technicians working on the NHS system.

Prerequisite: None

Course Format: Four day course

CERT - RADIATION SAFETY TRAINING
(Offered at LCC & Ferris State University)

This course is mandated by the Nuclear Regulatory Commission (NRC) for all individuals who may handle, transport or use a nuclear moisture density gauge. This training covers all aspects of ownership of radioactive materials including transportation, storage, security, radiation exposure occupational dose limits, health risks and emergency response. The NRC requires successful completion of this training on an annual basis. A 50 question written exam is given with a 70% or better score required for passing. Certification is valid for one year.

Audience: Individuals who handle, transport or use a nuclear moisture density gauge.

Prerequisite: None

Course Format: One-half day

CERT - STORMWATER OPERATOR
(Offered through MDEQ)

For an MDOT employee to become a certified storm water operator, the training consists of wtching a video and taking the exam. Both the video and exam area available through the MDEQ Surface Water Quality (SWQ) District Offices. Each MDOT Region office should have two copies of the video available for use by the field personnel also (the exam would still need to be taken at the appropriate MDEQ District office).

Audience: Construction Technicians, Engineers

Prerequisite: None

CERT - SOIL EROSION & CONTROL
(Offered through MDEQ)

The course is three days long and on the third day a written exam will be given with the passing score of 70% or above. A certification for 5 years will be given if the student passes the course.

Audience: Technician, Engineers

Prerequisites: None

MATH I - TECHNICAL ARITHMETIC

This is course for those who require a review of arithmetic as indicated by a score below 80% on the Arithmetic evaluation test.

Prerequisite: None

Course Format: Classes will meet one day each week for a period of 13 weeks.

MATH I - TECHNICAL ARITHMETIC EVALUATION

Must receive a score of 80% or more to pass evaluation.

Prerequisite: None

MATH II - TECHNICAL ALGEBRA

This course is intended for those who require instruction in the operations of algebra as indicated by a score below 80% on the Algebra evaluation test.

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Course Format: Classes will meet one day each week for a period of 10 weeks.

MATH II - TECHNICAL ALGEBRA EVALUATION

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Must receive a score of 80% or more to pass algebra evaluation.

MATH III - TECHNICAL GEOMETRY

This course is intended for those who require instruction in the concepts of geometry as indicated by a score below 80% on the Geometry evaluation test.

Prerequisite: A minimum score of 80% for the Algebra course or evaluation test.

Course Format: Classes will meet one day each week for a period of 10 weeks.

MATH III - TECHNICAL GEOMETRY EVALUATION

Prerequisite: A minimum score of 80% for the algebra course or evaluation test.

Must receive a score of 80% or more to pass geometry evaluation.

MATH IV - TRIGONOMETRY

This course is intended for those who require instruction in the concepts of trigonometry as indicated by a score below 80% on the Trigonometry evaluation test.

Prerequisite: A minimum score of 80% for the Geometry course or evaluation test.

Course Format: Classes will meet one day each week for a period of 10 weeks.

MATH IV - TRIGONOMETRY EVALUATION

Prerequisite: A minimum score of 80% for the geometry & algebra courses or evaluation tests.

Must receive a score of 80% or more to pass trigonometry evaluation.

BASIC PLAN READING

This course is designed to introduce technicians to the basic elements of plan reading.

Audience: Technicians and Engineers

Prerequisite: A minimum score of 80% for the Arithmetic, Algebra, and Geometry courses or evaluation tests.

Course Format: Classes will meet one day per week for a period of 14 weeks.

PLAN READING EVALUATION

Prerequisite: Al minimum score of 80% for the geometry course or evaluation test.

Must receive a score of 70% or more to pass plan reading evaluation.

INSPECTION AND QUALITY CONTROL PROCEDURES

This course is designed to give technicians and engineers, who are generally inexperienced in highway construction procedures, the basic competency to provide quality inspection and testing at the job site. The student must perform all laboratory tests with satisfactory proficiency and pass comprehensive written tests at a minimum 70% accuracy.

Audience: Technicians and Engineers

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Course Format: A 102 hour course covering a period of five weeks. The course is divided into five different units.

INSPECTION - CONCRETE PAVEMENT/BRIDGE CONSTRUCTION

This course is designed to give technicians and engineers the competency to provide quality inspection for concrete pavement and bridge construction at the job site. Will cover Paving, Pavement Rehabilitation, Bridge Substructure, Environmental Protection, and Bridge Superstructure. The participant must pass a written test with a minimum 70% accuracy. The student must pass a comprehensive written test with a minimum 70% accuracy.

Audience: Technicians and Engineers

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Course Format: 3 ½ day course.

INSPECTION - CONCRETE PLANT

This course is designed to give technicians and engineers the competency to provide quality testing at the job site. The student must perform all laboratory tests with satisfactory proficiency and pass a comprehensive written tests with a minimum 70% accuracy.

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Course Format: 3 day course

INSPECTION - BITUMINOUS PAVING

This course is designed to give technicians and engineers the competency to provide quality bituminous paving inspection at the job site. The student must pass a comprehensive written test with a minimum 70% accuracy.

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Course Format: 3 ½ day course

INSPECTION - BITUMINOUS PLANT

This course is designed to give technicians and engineers the competency to provide quality bituminous testing at the job site. The student must pass a comprehensive written test with a minimum 70% accuracy.

Prerequisite: A minimum score of 80% for the Arithmetic course or evaluation test.

Course Format: 3 day course

COMPUTERIZED OFFICE TECHNOLOGY

This course is intended for those who require instruction in the principles of record keeping and documentation for Construction projects.

Prerequisite: A minimum score of 80% for the Arithmetic, Algebra, and Geometry courses or evaluation tests, as well as satisfactory completion of Plan Reading I course or evaluation test.

Course Format: Classes will be held one day each week for a period of 9 weeks.

SURVEYING PRACTICES I
(Offered at LCC)

This course is intended to introduce the beginning student to basic surveying equipment, techniques, and computations.

Prerequisite: A minimum score of 80% for the Arithmetic, Algebra, Geometry, and Trigonometry courses or evaluation tests.

Course Format: Classes will be two days a week for a period of 16 weeks.

SURVEYING PRACTICES II
(Offered at LCC)

This course is intended to introduce ideas in establishing grades and field books from highway construction plans.

Prerequisite: Satisfactory completion of Surveying Practices I, or a passing grade on the mathematics and Surveying I evaluation tests.

Course Format: Classes will be two days a week for a period of 16 weeks.

SURVEY REFRESHER

This course is intended to introduce basic surveying practices, techniques, and practices. The course consists of computations in such areas as horizontal curves, vertical curves, spirals and data needed for highway construction layout. Course will also include field work with levels, transits, total stations, lasers, and data collectors.

Audience: New Engineers

Prerequisite: None

Course Format: Classes will be 5 days a week for 4 weeks.

SITE SURVEY

Upgraded Survey 4 to Window based application.

Audience: Engineers and Technicians

Prerequisite: Trigonometry

Course Format: 2 days

FIELDMANAGER

FieldManager is PC-based construction management system for managing and tracking construction projects, documenting construction progress, initiating contractor payments and communicating with the central office contract administration system. This training offers an overview of the software and contains step-by-step instruction on the most useful and most frequently used FieldManager functions. It covers basic tasks such as loading contracts, contract documentation, Inspector's Daily Reports, Contract Modifications, Estimates, and Materials.

Audience: Engineers and Technicians

Prerequisite: None

Course Format: 2 days

SEM - PE REFRESH

Course designed to assist in preparing for Professional Engineer Licensing Exam.

Audience: Engineers

Prerequisite: Completion of the Fundamentals of Engineer exam (part 1) with a passing score.

Course Format: 7 days

Ferris State University
Institute for Construction Education and Training
1020 East Maple St. ICET
Big Rapids, MI 49307-1649

Michigan Bituminous QC/QA Technician Certification Program for 2005

In cooperation with:
Michigan Asphalt Paving Association
and the
Michigan Department of Transportation

Program Administered by
FERRIS STATE UNIVERSITY

The purpose of this program is to comply with the requirements of the Federal Highway Administration final rule 23CFR Part 637 – Quality Assurance Procedure for Construction of June 29, 1995. **It is mandatory that all persons involved in sampling and testing on Quality Control/Quality Assurance (QC/QA) bituminous contracts with Federal Aid be qualified by this program.**

The Michigan Bituminous QC/QA Technician Certification Program is a comprehensive testing process to verify the qualifications of individuals involved with quality control or quality assurance testing. **THIS IS NOT A TRAINING COURSE**. Applicants must be knowledgeable of the QC/QA test procedures and specifications (Sec. 501, 1996 Standard Specifications for Construction and relevant Special Provisions), and documentation of test results. Applicants must be proficient at performing the tests as described in the Bituminous QC/QA Procedures Manual of Field Testing .

No formal training for this program is required. Certification as a Michigan Certified Aggregate Technician or as a Michigan Certified Bituminous Laboratory Technician, Level I is not required. Individuals qualified in this program will fulfill the requirements of the Michigan Certified Bituminous Laboratory Technician, Level I.

CERTIFICATION PROGRAM

Program Content

The 4 day program consists of the following:

1. Review of related specifications, required documentation, sampling and testing procedures.
2. Demonstration and hands on practice of laboratory procedures. This is an opportunity for the applicant to become familiar with the laboratory facilities which will be used to administer the practical examination.
3. Practical skills examination.
4. Written examination.

Requirements for Application

Applicants must submit ten (10) complete sets of QC/QA tests. The tests may not be prior to 2001. The "complete set" is defined as the QC/QA tests required by the specification for a sublot. (See checklist for additional requirements *including verification test.*)

NOTE: An applicant may perform these tests on a local agency or private paving project, for example, as long as the verification criteria is met.

Requirements for Certification

An applicant will be considered qualified when all of the following requirements have been met:

1. Fulfill the requirements for application.
2. Attendance at the 4 day program.
3. Achieving a passing score on both the practical skills and written examination.

The qualification period is three years.

2005 Sessions

Program Dates	Application Deadline
QC1 January 11 to 14, 2005	December 31, 2004
QC2 February 8 to 11, 2005	January 21, 2005
QC3 March 21 to 24, 2005	March 4, 2005
QC4 April 5 to 8, 2005	April 1, 2005
QC5 April 19 to 22, 2005	April 8, 2005

Cost for Certification: $1,250.00 per session.

Waiver Certification

Requirements for Waiver Application

1. Three years of QC/QA testing experience or two years QC/QA testing experience with a Civil Technology or Civil Engineering Degree.
2. Submit proof of experience and thirty (30) sublots sets of QA/QC tests performed by the applicant along with independent verification test reports (1:5 ratio).

Requirements for Waiver Certification

Eligible applicants will be required to take a 1½ day waiver examination. The waiver examination consists of the regular certification examination (one day practical skills examination and a one half day written examination). Applicants who fail either examination must complete the 4 day program.

Please Note: Waivers must be scheduled by prior arrangement.

Cost for Waiver: $1,250.00 per waiver.

TIPS FOR PASSING QC/QA EXAMINATIONS

1. The candidates will be proficient in the operation of the following equipment:
    a. Centrifuge OR Vacuum Extractor.
    b. Rice (Theoretical Maximum Density) equipment.
    c. Ignition Oven.
    d. Gyratory Compactor
    e. Sieving Equipment
2. The candidates must know how to complete Michigan Department of Transportation documentation. Computer generated forms are not permitted in the classrooms or laboratories.
3. The candidates must know how to perform all calculations using a handheld display calculator.

RECERTIFICATION PROGRAM

Program Content

The one day program consists of the following:

1. Review of related specifications, required documentation, sampling and testing procedures.
2. Demonstration review and hands on practice of laboratory procedures added.
3. Written examination.

Requirements for Application

1. Submit test reports from thirty (30) complete sets of QC/QA tests performed during the most recent certification period as a certified technician. *The 30 sets of QC/QA tests may be obtained from MDOT or Local Agency QC/QA projects accompanied by independent verification test reports (1:5 ratio). These tests must be QC or QA tests performed as actual project documentation and must be part of the project records. No substitutions are permitted for these tests.*

2. Submit independent verification test reports for the 30 sets of QC/QA test (1:5 ratio).

The test data will be reviewed by the Program Administrator to determine eligibility for recertification.

Requirements for Recertification

An applicant will be considered recertified when all of the following requirements have been met:

1. Fulfill the requirements for application.
2. Attendance at the one day program.
3. Achieving a passing score on the written examination.

The recertification period is three years.

2005 Sessions

Program Dates	Application Deadline
QCR1 January 10, 2005	December 31, 2004
QCR2 February 7, 2005	January 14 , 2005
QCR3 April 4, 2005	March24, 2005
QCR4 April 18, 2005	April 1, 2005

Cost for Recertification: $375.00 per session

Course Registration Information

Fees and Registration

1. The registration fee for the course and the examination includes all instruction, course materials and handouts, examination fee, certificate, and identification card.

2. Mail the registration form with check or money order, payable to **"Ferris State University"** or complete the attached registration form along with the credit card information and fax it to 231-591-5837. ***No telephone registrations will be accepted.*** A written confirmation letter of your class schedule will be mailed.

3. Class substitutions of individuals will be permitted within 5 business days of the scheduled course/ examination.

4. Transferring from one course date to another $100.

Cancellation Policy

1. Ferris State University also reserves the right to cancel programs because of insufficient class size, or where conditions beyond its control prevail. The technician will be notified one week prior to the start of the course of any cancellations. Any additional costs incurred by the enrollee because of cancelled programs is the responsibility of the enrollee.

2. Written cancellations by preregistrants postmarked/faxed ten or more days before a program will be fully refunded. NO REFUND will be allowed for withdrawals postmarked/faxed less than ten days before the seminar.

3. Failure to attend the program will result in NO REFUND of course fees. Unforeseen emergencies that result in absences during the course will result in a refund of the course fee or rescheduling of course.

Other Information

The Institute for Construction Education and Training will continue the past practice of scheduling as many sessions of the Courses and Certification Examinations as necessary to meet the needs of the construction industry.

During the summer months we maintain a list of individuals who are interested in the certification programs. When we meet a minimum number for enrollment criteria to fill a program we contact all on the list and schedule a program. Please call if you do not see a program in this brochure that fits your needs.

For registration information or course content information, call Dan Hazen, Program Coordinator at 231.591.5826.

Travel and Lodging

Individuals are responsible for their travel expenses, plus their room and board while in Big Rapids.

Best Western..... (231) 592.5150 OR 877.592.5150
Country Inn & Suites ..... (231) 527.9000
Holiday Inn Hotel and Conference Center ..... (231) 796.4400 OR 800.465.4329
Super 8 Motel ..... (231) 796.1588 OR 800.800.8000

APPLICATION FOR ENROLLMENT
MICHIGAN BITUMINOUS QC/QA TECHNICIAN CERTIFICATION PROGRAM

Please print or type

NAME		
COMPANY NAME		
COMPANY ADDRES		
CITY	STATE	ZIP
WORK TELEPHONE NUMBER	FAX TELEPHONE NUMBER	

Complete only if you want registration and class materials mailed to your home address.

HOME ADDRESS		
CITY	STATE	ZIP

First Choice _____ Second Choice _____

Method of Payment

☐ Visa ☐ MasterCard ☐ Discover	CREDIT CARD NUMBER	EXPIRATION DATE
Check Number	SIGNATURE	

Credit Card payments may be faxed to 231-591-5837.

Make checks payable to **"Ferris State University."** Mail form with payment and supporting documentation to:

Ferris State University
Institute for Construction Education and Training
1020 East Maple St. ICET
Big Rapids, MI 49307-1649

CHECKLIST FOR SUBMITTING PROOF OF TESTING EXPERIENCE. Attach Copies of supporting documentation for ten (10) complete sets of tests. For Michigan Department of Transportation QC/QA projects submit Report of Verification/Acceptance and Core Density (MDOT Form 1903B or equivalent) or Report of Contractor's Quality Control Test (MDOT Form 1903C or equivalent). The documentation must also include independent verification test reports for three (3) of the ten test submitted. Independent verification test reports are defined as: 1.) A QA verification test 2.) Independent Assurance Test 3.) QC test for the same sublot of the QA test submitted as one of the "10" test 4.) Test results for all QC/QA parameters for the same mix production split, tested by a tester with a different employer. (For example, a local agency project where the Owner and Industry testers perform test for this purpose.) The candidates worksheets are not to be submitted with MDOT Form 1903B, 1903C or equivalent.

	TEST PROCEDURE	1 Sublot # Date	2 Sublot # Date	3 Sublot # Date	4 Sublot # Date	5 Sublot # Date	6 Sublot # Date	7 Sublot # Date	8 Sublot # Date	9 Sublot # Date	10 Sublot # Date
	Laboratory where test was performed										
	Indicate which test have been verified and attach copy of verification										
FOR OFFICE USE ONLY	Gradation/ Crush										
	Theoretical Maximum Density										
	Marshall/Gyratory Compactor Density										
	Asphalt Content										

I _____ **certify that the test results submitted were performed by me.**

APPLICANT SIGNATURE _____

NOTE: For Candidates enrolling in the RECERTIFICATION PROGRAM and the WAIVER CERTIFICATION this page must be reproduced to indicate the sublots and verification test being submitted with the application.

FERRIS STATE UNIVERSITY
Institute for Construction Education and Training
1020 East Maple Street, ICET
Big Rapids, MI 49307-1649

Program Offerings for the Year 2005

Michigan Certified Aggregate Technician

Michigan Certified Bituminous Laboratory Technician Level 1

Density Control Training Course and Certification

Bituminous Paving Operations

Superpave Mix Design

Aggregate Certification and Training

WHO SHOULD ATTEND

Michigan Department of Transportation regulations requires that public or private entities involved in road construction projects on the National Highway System roads which are not Quality Control/ Quality Assurance projects must have a Michigan Certified Aggregate Laboratory Technician on hand to conduct the acceptance tests. Affected entities include, but are not limited to: county and city road commissions and consultants performing aggregate sampling, testing and inspections. This certification program is open to all sampling and testing personnel who have the responsibility for quality control or final acceptance of construction aggregates.

All sources supplying aggregates to projects that require pre-qualification shall have a "Certified Aggregate Technician" conducting aggregate sampling and testing. A "Certified Aggregate Technician," is a person who by education, experience and testing is capable of conducting test and related calculations within the requirements of the project specifications.

The Michigan Certified Aggregate Technician program consist of five modules. To be certified the technician must pass sections A, B and C. Section A covers Stockpiling and Sampling procedures, Section B is Sample Reduction, Loss by Wash, Sieving, Documentation and Section C is the picking of Crushed Material. The program also includes two additional endorsements. These are D which covers the determination of Deleterious Materials and E which is the determination of Thin and Elongated Material.

APPLICATION REQUIREMENTS

Individuals applying to take the certification courses and exam should have experience or a working knowledge of listed course topics before undertaking the examination. Basic math skills in the use of fractions, decimals, ratios, and percentages are required.

Previous experience may qualify an applicant to take a waiver exam without attending the classroom and laboratory sessions. Failure in passing the waiver examination will require the candidate to complete the entire course. Individuals interested in this option are required to submit a resume of experience to the Institute for Construction Education and Training for prior approval.

EXAMINATION

The Board of Examiners shall administer an examination for certification. The examination is open book.

Part 1 - **Written examination**

The exam addresses aggregate properties, use, specifications, testing and reporting, sampling, stockpiling, hauling and the conveying of aggregates.

Part 2 - **Practical examination**

The monitored completion of the actual field tests, methods, procedures and reporting of specified aggregate tests. In the practical exam candidates demonstrate their competency in meeting aggregate testing standards.

Applicants failing any part of the exam will be allowed to retake that portion of the exam, written or practical. A fee will be charged an all retests not completed within one week of notification of failing the examination. However, if an applicant fails the second time, the entire course will need to be repeated. All retests must be completed within one year. Candidates will be informed of their options for retaking exams upon notification of failure.

AGGREGATE TECHNICIAN TRAINING COURSE AND CERTIFICATION

The technician training course provides four days of training followed by the certification test on the fifth day. This course is designed to give candidates the skills and knowledge necessary to pass the Michigan Certified Aggregate Technician Test. The course is composed of both classroom and laboratory instruction.

Course topics include:

- Aggregate stockpiling and sampling techniques
- Michigan Department of Transportation Aggregate Specifications and Michigan Test Methods
- Proper test result documentation
- American Society for Testing Materials Standards (ASTM)

AC1	January 10 - 14	AC5	March 28 - April 1
AC2	January 31 - February 4	AC6	April 11 - 15
AC3	February 14 - 18	AC7	April 25 - 29
AC4	March 14 - 18	AC8	May 9 - 13

Cost: $625 each session

AGGREGATE RECERTIFICATION COURSES

Certification expires five years from the year granted. It is the responsibility of the practicing technician to maintain an active certification. For recertification, the technician must pass both a written and practical examination similar in format to be original certification tests. Failure to achieve a passing score will require the candidate to retake the failed portion of the exam, written or practical. A fee will be charged on all retests. Failure to pass the second time will require the candidate to attend the entire certification course. If a Certified Aggregate Technician falls to become recertified from the date of certificate expiration, at a minimum, the refresher course must be taken to recertify.

REFRESHER COURSE AND RECERTIFICATION TEST

The refresher course includes a one day workshop followed on the second day by the recertification test described above. The refresher course gives technicians an opportunity to review the certification test requirements, to be provided with updated MDOT regulations, and to have lab practice before the practical exam. The refresher course is limited to individuals who already have received Aggregate Technician Certification.

AR1	January 18 - 19	AR6	April 4 - 5
AR2	January 20 - 21	AR7	April 6 - 7
AR3	February 22 - 23	AR8	April 19 - 20
AR4	February 24 - 25	AR9	April 21 - 22
AR5	March 23 - 24		

Cost: $325 each session

Programs for the Michigan Certified Aggregate Technician,Michigan Certified Bituminous Laboratory Technician Level 1, Density Control Certification and the Michigan Bituminous QC/QA Technician are offered are offered during the months of June through September. If you would like more information, please call Dan Hazen, Program Coordinator, telephone 231.591.5826.

Michigan Certified Bituminous Laboratory Technician Level 1 Certification and Training

Michigan Department of Transportation regulations requires that public or private entities involved in road construction projects on the National Highway System roads which are not Quality Control/ Quality Assurance projects must have a Michigan Certified Bituminous Laboratory Technician Level 1 on hand to conduct the acceptance tests. Affected entities include, but are not limited to: county and city road commissions and consultants performing bituminous sampling, testing and inspections.

To become certified an individual must demonstrate by a written and practical examination, skills and knowledge in the following areas:

Asphalt Content by centrifuge extraction, calculated asphalt content and gradation
An introduction to the Theoretical Maximum Density (Rice Test) and Marshal test.
Mix Specifications and Documentation Requirements
Safe Laboratory Practices
Sampling of Bituminous Mixtures
Basic Bituminous Plant Operations

Certification is granted for a three year period. After that, a technician must pass a recertification test every three years.

APPLICATION REQUIREMENTS

The Michigan Certified Bituminous Laboratory Technician Level 1 program is for bituminous personnel engaged in acceptance testing for local government agencies. An applicant must be a Michigan Certified Aggregate Technician before enrolling in this course. A simple calculator able to compute basic math functions should be brought to class.

Previous experience may qualify an applicant to take a waiver exam without attending the classroom and laboratory sessions. Failure in passing the waiver examination will require the candidate to complete the entire course. Individuals interested in this option are required to submit a resume of experience and to contact the Institute for Construction Education and Training for prior approval.

EXAMINATION

The Board of Examiners shall administer the examination for certification. The examination is composed of two parts:

Part 1 - **Written examination**
The written exam is an open book exam that tests for a basic knowledge of the characteristics of bituminous materials, bituminous plant operations, the calculations required for testing and documentation.

Part 2 - **Practical examination**
The practical exam is the monitored completion of the actual quartering, extraction and documentation for a bituminous mixture.

Applicants failing any part of the exam will be allowed to retake that portion of the exam, written or practical. A fee will be charged for all retests. However, if an applicant fails the second time, the entire course will need to be repeated. All retests must be complete within one year. Options for retaking exams will be explained at the notification of failure.

BITUMINOUS TECHNICIAN TRAINING COURSE AND CERTIFICATION

The technician training course is a four-day course followed by the certification test on the fifth day. ***This course is designed to give candidates the skills and knowledge necessary to pass the Michigan Certified Bituminous Laboratory Technician Level 1 Test.*** The course is composed of both classroom and laboratory instruction, with over half the course devoted to developing laboratory testing skills. Students can expect homework assignments.

BC1	January 31 - February 4	BC3	April 11 - 15
BC2	February 28 - March 4	BC4	May 16 - 20

Cost: $625 each session

BITUMINOUS RECERTIFICATION COURSES

Recertification will be required every three years following certification. The expiration date is printed on the technicians certification wallet card. It is the responsibility of the practicing technician to maintain an active certification. Recertification does not require current status as a Michigan Certified Aggregate Laboratory Technician.

For recertification, the technician must pass a practical examination similar in format to the original certification test. Failure to achieve a passing score will require the candidate to retake the exam. Failure to pass the second time will require the candidate to attend the entire certification course. If a Michigan Certified Bituminous Laboratory Technician Level 1 fails to become recertified within one calendar year from the date of certificate expiration, at a minimum, the refresher course must be taken.

BITUMINOUS RECERTIFICATION TEST

The recertification test is a one day examination that is open only to individuals who already have received Michigan Certified Bituminous Laboratory Technician Level 1 Certification. A recertification tests may be taken only by individuals whose certification is about to expire, or those individuals whose certification has been expired for less than one year. The recertification test consists of a practical examination similar to the test completed at the time of initial certification.

By Request **Cost: $195 each session**

REFRESHER COURSE & RECERTIFICATION TEST

The refresher course includes a one day workshop followed on the second day by the recertification test described above. The refresher course gives technicians an opportunity to review the certification test requirements, to be provided with updated MDOT regulations, and to have lab practice before the practical exam. The refresher course is limited to individuals who already have received Michigan Bituminous Laboratory Technician Level 1 Certification. *It is recommended for applicants who do not perform testing on a regular basis.*

BF1	February 22 - 23	BF3	March 31 - April 1
BF2	February 24 - 25		

Cost: $325 each session

Please Note: *This program does not meet the current MDOT/MAPA requirements for the "Michigan Bituminous QC/QA Qualification Program." It is intended for agencies that require only an extraction test for quality assurance purposes.*

Other Training Courses

DENSITY CONTROL TRAINING COURSE AND CERTIFICATION

This four-day course is designed for technicians and their supervisors who have responsibility for the density control on soil subgrade and aggregate bases. The course introduces the theory of compaction on various materials, and provides training using the common density control tests, procedures and documentation.

The program consist of the following test:

- Speedy® Moisture Tester
- Michigan Cone Test
- Michigan Modified T-180 Test
- Troxler® Surface Moisture-Density Gauge
- One Point T-99.Test

DC1	January 24 - 27	DC5	March 28 - 31
DC2	February 7 - 10	DC6	April 4 - 7
DC3	February 28 - March 3	DC7	May 23 - 26
DC4	March 14 - 17		

Cost: $475

DENSITY CONTROL RECERTIFICATION COURSES

It is the responsibility of the practicing technician to maintain an active certification. For recertification, the technician must pass both a written and practical examination similar in format to be original certification tests.

The refresher course includes a one day workshop followed on the second day by the recertification written and practical examination. The refresher course gives technicians an opportunity to review the certification test requirements, to be provided with updated MDOT regulations, and to have lab practice before the practical exam. The refresher course is limited to individuals who already have received a Density Control Certification.

DCR1	January 18 - 19	DCR5	March 21 - 22
DCR2	January 20 - 21	DCR6	April 11 - 12
DCR3	February 14 - 15	DCR7	April 13 - 14
DCR4	February 16 - 17		

Cost: $250

BITUMINOUS PAVING OPERATIONS

This four-day course is designed to provide a basic and uniform understanding of the inspection and evaluation of bituminous paving operations. Attention is given to providing participants with an introduction to the basic principles of pavement construction and quality control. Information will be provided to help insure a better riding surface and a reduction in maintenance costs. The course is open to individuals from both the private and public sectors who perform regular inspections and evaluations of bituminous paving, and for those who expect to become street inspectors in the bituminous paving industry.

Course topics: paving equipment, base preparation, traffic control, paving operations, rolling operations, surface treatments, special bituminous, construction field testing.

PO1	February 22 - 25	PO2	March 8 - 11

Cost: $275

BASIC SUPERPAVE MIX DESIGN FOR BEGINNERS

This five day course has been developed to meet the needs of individuals who will be involved in Superpave mix design having little or no experience. This program begins with the Design Engineers having selected the Performance Graded Asphalt Binder and a Superpave Hot Mix Asphalt Mixture desired for a project. As a technician, your job is to design a mixture that meets the criteria for Superpave.

Aggregate specific gravity, NAA angularity, gradation and blending with practice problems will be covered in detail. Each lecture and demonstration involving aggregates will be followed with hands on practice. The participant will perform the specific gravity test and prepare a trial blend of fine and coarse aggregates. Laptop computers are welcome in the classroom and laboratories, but are not required.

Volumetric properties and calculations will be covered in detail. Asphalt binder will be added to the aggregate trial blended by the participants and mixed. The participant will then perform all tests necessary and compare the results with the criteria for Superpave. The last item will be to determine the Tensile Strength Ratio of a mix.

THIS IS NOT A CERTIFICATION PROGRAM. This program will have extensive laboratory time. The depth of the program would be perfect for QC Managers interested in what changed the volumetreic properties of the plant produced HMA and how to make the necessary changes to meet the Job Mix Formula.

The class size is limited to eight participants and only two sessions are planned for the year. They will fill on a first come, first served basis.

MD1 January 24 - 28 MD2 March 7 - 11

Cost: $750

Aggregate Board of Examiners

American Public Works Association
Consulting Engineers Council of Michigan
County Road Association of Michigan
Federal Highway Administration
Ferris State University
Michigan Aggregate Association
Michigan Asphalt Paving Association
Michigan Concrete Association
Michigan Concrete Paving Association
Michigan Department of Transportation
Michigan Municipal League
Michigan Road Builders Association
Michigan Society of Professional Engineers
Michigan Technological University

Bituminous Board of Examiners

American Public Works Association
The Asphalt Institute
Consulting Engineers Council of Michigan
County Road Association of Michigan
Federal Highway Administration
Ferris State University
Michigan Asphalt Paving Association
Michigan Department of Transportation
Michigan Aggregate Association
Michigan Municipal League
Michigan Road Builders Association
Michigan Society of Professional Engineers
Michigan Technological University

Course Registration Information

Fees and Registration

1. The registration fee for the course and the examination includes all instruction, course materials and handouts, examination fee, certificate, and identification card.

2. Mail the registration form with check or money order, payable to **"Ferris State University"** or complete the attached registration form along with the credit card information and fax it to 231-591-5837. ***No telephone registrations will be accepted.*** A written confirmation letter of your class schedule will be mailed.

3. Class substitutions of individuals will be permitted within 5 business days of the scheduled course/examination.

4. Transferring from one course date to another $100.

Cancellation Policy

1. Ferris State University also reserves the right to cancel programs because of insufficient class size, or where conditions beyond its control prevail. The technician will be notified one week prior to the start of the course of any cancellations. Any additional costs incurred by the enrollee because of cancelled programs is the responsibility of the enrollee.

2. Written cancellations by preregistrants postmarked/faxed ten or more days before a program will be fully refunded. NO REFUND will be allowed for withdrawals postmarked/faxed less than ten days before the seminar.

3. Failure to attend the program will result in NO REFUND of course fees. Unforeseen emergencies that result in absences during the course will result in a refund of the course fee or rescheduling of course.

Other Information

The Institute for Construction Education and Training will continue the past practice of scheduling as many sessions of the Michigan Certified Aggregate Technician, the Michigan Certified Bituminous Laboratory Technician, Level 1 and the Density Control Training Courses and Certification Examinations as necessary to meet the needs of the construction industry.

During the summer months we maintain a list of individuals who are interested in the certification programs. When we meet a minimum number for enrollment criteria to fill a program we contact all on the list and schedule a program. Please call if you do not see a program in this brochure that fits your needs.

For registration information or course content information, call Dan Hazen, Program Coordinator at 231.591.5826.

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Country Inn & Suites ..... (231) 527.9000
Holiday Inn Hotel and Conference Center ..... (231) 796.4400 OR 800.465.4329
Super 8 Motel ..... (231) 796.1588 OR 800.800.8000

REGISTRATION INSTRUCTIONS

Select the courses you wish to register. In the column labeled "Desired Course" write in your first choice for that course. Write in your alternate choice (should your first choice be filled at the time of registration) for the course in the column labeled "Alternate Choice." Courses are filled on a first come, first serve basis. No telephone registrations will be accepted. *Payment must be received at the time of registration.* Cancellations are subject to FSU policy detailed in the registration section of this booklet. Upon registration, a confirmation letter will be sent detailing your registration dates.

Please print or type (use one form per applicant)

NAME		
COMPANY NAME		
COMPANY ADDRESS		
CITY	STATE	ZIP
WORK TELEPHONE NUMBER	FAX TELEPHONE NUMBER	

Complete only if you want confirmation letter mailed to your home address.

HOME ADDRESS			
CITY	STATE	ZIP	HOME TELEPHONE NUMBER

DESIRED COURSE	ALTERNATE COURSE	COURSE DESCRIPTION	UNIT PRICE	TOTAL
_____	_____	Aggregate Refresher/Recertification Test	$325	_____
_____	_____	Aggregate Training Course and Test	$625	_____
_____	_____	Bituminous Level 1 Recertification Test	$195	_____
_____	_____	Bituminous Level 1 Refresher/Recertification Test	$325	_____
_____	_____	Bituminous Level 1 Technician Course and Test	$625	_____
_____	_____	Density Control Training Course and Certification	$475	_____
_____	_____	Density Control Refresher/Recertification Test	$250	_____
_____	_____	Bituminous Paving Operations	$275	_____
_____	_____	Basic Superpave Mix Design for Beginners	$750	_____
			TOTAL	$_____

Method of Payment

☐ Visa ☐ MasterCard ☐ Discover	CREDIT CARD NUMBER	EXPIRATION DATE
Check Number	SIGNATURE	

Credit card orders may be faxed to 231-591-5837.

Make checks payable to **'Ferris State University.'** Mail form with payment to:

Ferris State University
ICET Registration
1020 East Maple St., South Building
Big Rapids, MI 49307-1649

2005 Certification

Level I Concrete Field Testing Technicians

Level II Advanced Concrete Technicians

Michigan Concrete Association

2005 Certification

2005 Concrete Technician Certification

For more than 25 years, the Michigan Concrete Association has served the training needs of Michigan's concrete industry. The MCA offers courses for ACI Level I Technician, Level II Advanced Concrete Technician, ACI Laboratory Testing Technician, Concrete Strength Testing Technician and ACI Flatwork Finisher Certification. The MCA is committed to its leadership role in technician training and certification. The MCA relationships with the Greater Michigan Chapter ACI and West Michigan Chapter ACI to serving the needs of the concrete industry for many years to come.

Recognition

Level I Technicians will receive a certificate and wallet card from the MCA as well as a wallet card from the American Concrete Institute (ACI). Level II Technicians will receive and wallet card from the MCA.

All Level I and Level II Technicians will have their name published in the MCA Technicians and listed on the MCA Website (www.miconcrete.org). In addition, will be listed on the ACI Website (www.concrete.org).

Level I Field Testing Technician

The Michigan Department of Transportation, ASTM C94 and ACI 318 require performing concrete tests be certified with respect to the following seven ASTM

- Sampling (C172)
- Temperature (C1064)
- Slump (C143)
- Density (C138)
- Concrete cylinders (C31)
- Air content-volumetric (C173)
- Air content-pressure (C231)

In addition to these tests, students will be introduced to the fundamentals of materials, water/cement ratio, curing and hot/cold weather concreting.

The Level I course is 3 days in length - 2 days of comprehensive instruction followed by an examination day. Certification requires passing three written exams and a performance exam.

Certification is valid for a 3 year period.

2005 Certification

Level I Exam

Written Exam

The certification contains two written exams.

Part I - ACI (Closed Book)

The ACI written exam consists of 55 multiple choice questions based on the seven ASTM tests. Students have 60 minutes to complete the exam. An overall score of 70%, including a minimum score of 60% on each individual test, is required to pass.

Part II - MCA (Open Book)

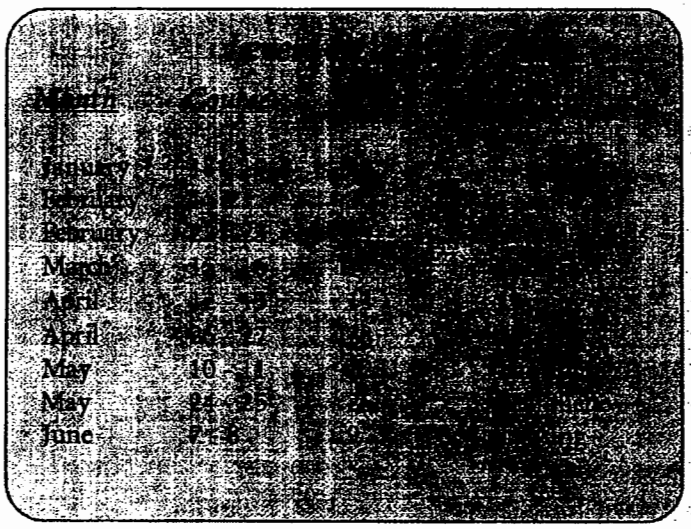
The MCA written exam consists of 50 questions of various form (e.g. true/false, multiple choice, fill-in-the-blank, etc.) Questions are based on the fundamentals of concrete. Students have 90 minutes to complete the exam with a minimum score of 70% required to pass.

Performance Exam

The ACI performance exam requires the student to correctly demonstrate their ability to perform each of the seven ASTM tests.

Level I Dates

The dates and locations for 2005 classes are as noted below. Class hours are from 8:00 a.m. through 4:30 p.m. each day.



"Exam Only" Option

Individuals are allowed to take the exams without attending the course. For "exam only" dates refer to the Level I registration form. For additional materials see page 5.

2005 Certification

Level II Advanced Concrete Technician

Required by MDOT for Quality Control Administrators on QA/QC projects, the Level II [illegible] following topics: aggregates for concrete, mix design theory, strength evaluation, placement/[illegible] troubleshooting. To become Level II certified, students must possess a current Level I [illegible] written exam. The Level II course is 3 1/2 days in length; 3 days of classroom/laboratory [illegible] 1/2 day (2 1/2 hour) written exam.

Written Exam

In addition to the material introduced in the Level II course, the exam includes the [illegible] in the Level I course. A minimum score of 70% is required to pass.

Level II Expiration Options

Technicians writing the Level II exam can choose from one of the following [illegible]

OPTION 1: Write the Level II exam only. With this option, your Level II certification [illegible] your current Level I certification expires on.

OPTION 2: Write the Level II exam and take the Level I ACI Field Test written and [illegible] your ACI exams in the same certification year, the Level II certification will be [illegible] expiration would be 2008. The ACI tests are not given on the same day as the Level II [illegible] for separately. However, there is no additional fee for taking the Level I ACI tests [illegible] Course and Exam.

Level II Course & Exam Date - March 1 - 4

The Level II course and exam will be held at St Marys Cement in Detroit. Class [illegible] each day. The exam is scheduled from 9:00 - 11:30 a.m. on March 4th.

Lodging - All Courses

Lansing: Candlewood Suites $69 (plus tax)
3534 Forest Rd, East Lansing, MI
(517) 351 - 8181 (Queen Bed Suites)

Grand Rapids: [illegible]

Detroit: Hampton Inn $87 (plus tax)
20061 Michigan Ave, Detroit, MI
(313) 436 - 9600
(Includes deluxe continental breakfast)

Marquette: [illegible]

Be sure to mention the MCA to receive the [illegible]

MCA Level I Field Testing Technician 2005 Certification

Mail all materials and exam results to my (choose one) → ○ home ○ office.
Note: We cannot ship materials to P.O. Box addresses. Please use a street address.

Name:_____ **e-mail:**_____
(Print name to appear on certificate) **(For confirmation purposes only)**

Home Address:_____ **Home Phone:**_____

_____

Company:_____ **County:**_____

Company Address:_____ **Company Phone:**_____

_____ **Company Fax:**_____

Special Dietary Needs (i.e. food allergies, vegetarian, etc...) _____

LEVEL I - Course & Exam Dates

Fees include lunch, breaks, texts and classroom materials.

Class Dates	Exam Date	Location	Class Dates	Exam Date	Location
○ January 18-19	January 20	St. Marys Cement,Detroit	○ April 26-27	April 28	MCA, Lansing
○ February 1-2	February 3	MCA, Lansing	○ May 10-11	May 12	MCA, Lansing
○ February 22-23	February 24	Grand Rapids	○ May 24-25	May 26	Marquette (UP)
○ March 15-16	March 17	MCA, Lansing	○ June 7-8	June 9	MCA, Lansing
○ April 12-13	April 14	MCA, Lansing			

AMOUNT DUE: Course & Exam fee (pg. 5 of brochure) $_____
(go to **PAYMENT** section below)

LEVEL I - Exam Only Option

For Students not interested in the two day course but would like to take the exam, please select an exam date from the list above:

Exam Date: _____

Exam only seats are limited and the fees listed do not include textbooks.

Textbooks (for Exam Only students)

Concrete Technician Workbook (ACI CP-01) ..... _____ X $55.00 = _____

Design & Control of Concrete Mixtures - 14th Edition (PCA) ... _____ X $75.00 = _____

AMOUNT DUE: "Exam Only" fee _____ + Additional Materials _____ = $_____
(go to **PAYMENT** section below)

PAYMENT

○ Check: Make payable to: *Michigan Concrete Association*.(Check must be received prior to class materials being mailed)
○ Bill MDOT
○ Credit card: Visa or MasterCard only (Credit cards will be charged at the time class materials are mailed)

Card Authorized Name _____

Credit Card #: _____ Exp. Date_____

Card Authorized Signature _____

Return this form with payment to:

Michigan Concrete Association 3130 Pine Tree Rd. Lansing, MI 48911
Tel. (800)678-9622 Fax. (517)393-1791

MCA Level II Advanced Concrete Technician 2005 Certification

Mail all materials and exam results to my (choose one) → O home O office.
Note: We cannot ship to P.O. Box addresses. Please use a street address.

Name: _____ **e-mail:** _____
(Print name to appear on certificate) **(For confirmation purposes only)**

Home Address _____

_____

Home Phone _____

Company _____

Company Address _____

_____

County _____ **Phone** _____ **Fax** _____

Special Dietary Needs (i.e. food allergies, vegetarian, etc...) _____

LEVEL II – Course & Exam Date
The Level II course will be held at St. Marys Cement, Detroit.

O **March** 1-4

Level II Expiration Option
Choose an Expiration Option as described on page 4 of the Brochure.

O OPTION 1 Let my Level II expire with my current Level I.
O OPTION 2 Renew my Level I so my Level II will last through 2008. Select a Level I exam date (page 3) to take the ACI written & performance exams.

Date:_____

AMOUNT DUE: Course/Exam fee (pg. 5 of the brochure) $_____ go to **PAYMENT** section below.

PAYMENT

O Check: Make payable to: *Michigan Concrete Association*.(Check must be received prior to class materials being mailed)
O Bill MDOT
O Credit card: Visa or MasterCard only (Credit cards will be charged at the time class materials are mailed)

Card Authorized Name _____

Credit Card #: _____ Exp. Date _____

Card Authorized Signature _____

Return this form with payment to:

Michigan Concrete Association
3130 Pine Tree Rd.
Lansing, MI 48911
Tel. (800)678-9622 Fax. (517)393-1791

2005 Certification

Fees

Level I or Level II Course & Exam

The following fees include pastries, lunch and snacks each day, the indicated texts and all exam [illegible] related expenses are not included. *(A fee of $150 will be charged for cancellations within 10 business [illegible] SHOWS will be charged full registration fees.)*

MCA Member	$600	Non-MCA Member	
Student	$325	Government/Municipal*	

*Government/municipal employees may qualify for reimbursement from MDOT. Please contact [illegible] (517)322-6792 for additional information.

Exam Only Students - Level I

Does not include materials. (See "Additional Materials" below)

MCA Member	$300	Non-MCA Member	
Student	$ 95	Government/Municipal	

(Proof of full-time student status will be required)

Additional Materials - Exam Only Students

Level I Course Texts

$55.00 ..... *Concrete Technician Workbook* (ACI CP-01)

$75.00 ..... *Design & Control of Concrete Mixtures 14th Edition (PCA)*

Level II Course Texts

$200.00 ..... Complete Manual

$28.50 ..... ACI E1-99 ..... *Aggregates for Concrete*

$54.00 ..... ACI 211.1- 91 .... *Selecting Proportions for Normal, Heavyweight, and [illegible]*

$33.00 ..... ACI 214 ..... *Recommended Practice for Evaluation of Strength [illegible]*

$50.00 ..... ACI 318-02 ..... *Building Code for Structural Concrete, Chapters [illegible]*

$22.50 ..... CIPs ..... *Concrete In Practice Series #1-34*

$52.50 ..... NRMCA 187 .... *Compilation of ASTM Standards Relating to Concrete [illegible]*

Upon receipt of your registration, a confirmation postcard or e-mail will be sent [illegible] 2-3 weeks prior to your class date, a confirmation letter with directions, [illegible] textbooks will be shipped via UPS.

2005 Certification

Level I Schedule

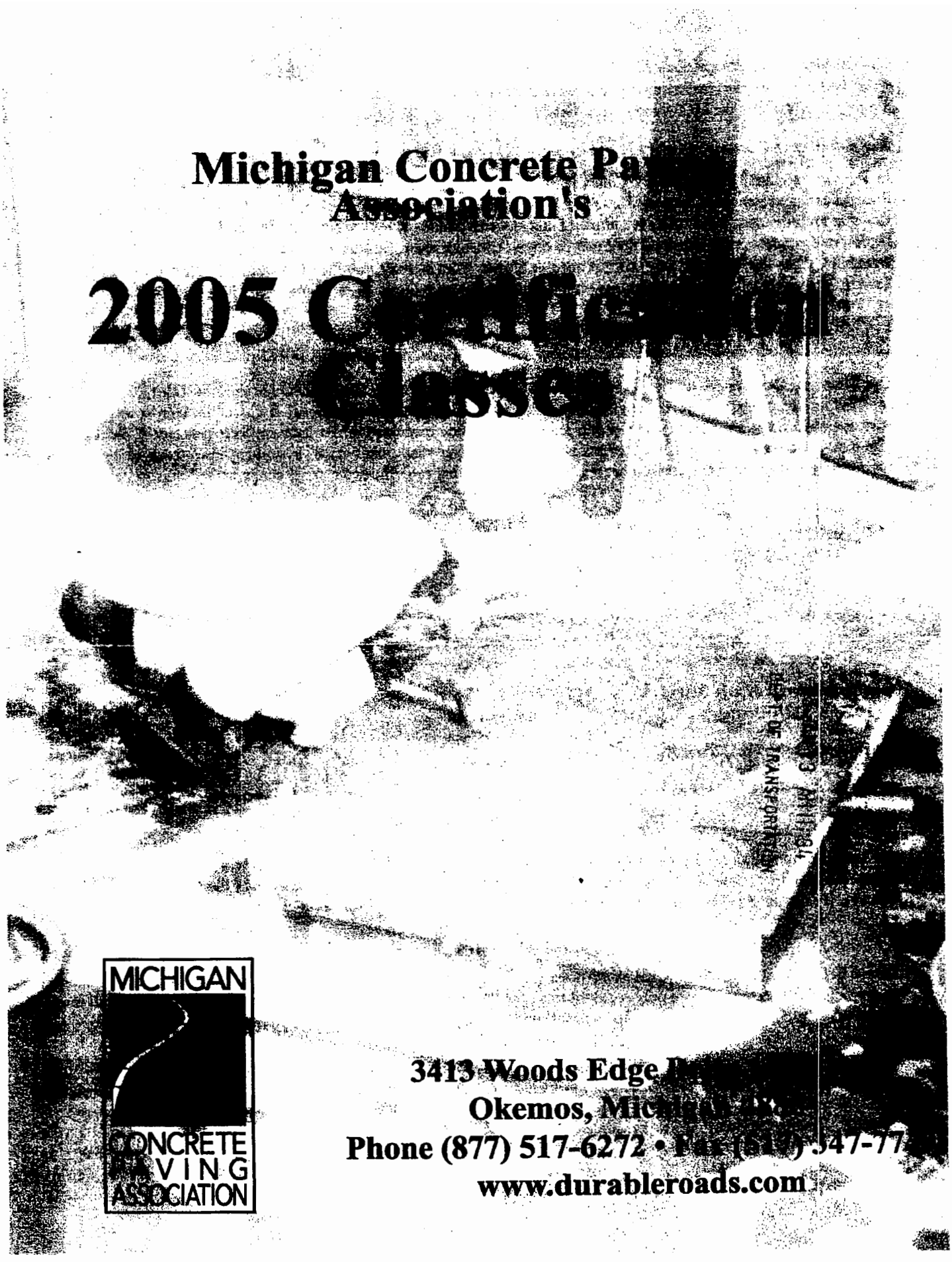
Month	Course	Exam	Location
January	18 - 19	20	Detroit
February	1 - 2	3	Lansing
February	22 - 23	24	Grand Rapids
March	15 - 16	17	Lansing
April	11 - 12	14	Lansing
April	26 - 27	28	Lansing
May	10 - 11	12	Lansing
May	24 - 25	26	Marquette
June	7 - 8	9	Lansing

Michigan Concrete Association
3130 Pine Tree Road
Lansing, MI 48911
800-678-9622
www.miconcrete.org

Level I Concrete Field Testing Technicians

Level II Advanced Concrete Technicians

PLEASE ROUTE TO ALL EMPLOYEES.


Michigan Concrete Pa
Association's
2005 C
Class
MICHIGAN
CONCRETE
PAVING
ASSOCIATION
3413 Woods Edge
Okemos, Mic
Phone (877) 517-6272 •
www.durableroads.com

Upon the successful completion of all three certification exams, each technician will receive wallet cards and certificates from the Michigan Concrete Paving Association and the American Concrete Institute. Individuals who complete the course are registered through the MCPA and ACI as Grade I Concrete Field Technicians for three years.

Level I Recertification

In order to maintain a current Level I Concrete Testing Technician certification, students must recertify every three years. Recertification students are integrated into the Level I classes. Although recertification students have the option of only showing up for exams, we strongly recommend that students attend the review session held on the third morning of class. If preferred, students may attend all five course days. Although recertification students are given a new ACI Technician Workbook when they register, they will not receive a new "Design and Control of Concrete Mixtures" book. If students have misplaced their book or would like to purchase the new 14th Edition, please contact the office at (517) 347-7720.

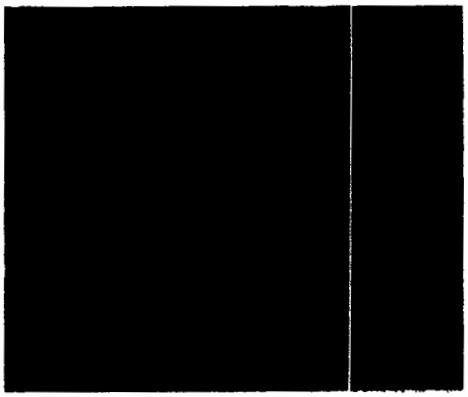
MICHIGAN CONCRETE TECHNICIAN—LEVEL II

The Michigan Department of Transportation requires that all Quality Control Administrators on QA/QC projects be certified as Level II Concrete Technicians. In order to become certified as a Level II Concrete Technician, students must maintain a current Level I certification and pass a written examination. To increase their chances of successfully completing the Level II course, participants should have strong basic math skills, a working knowledge of aggregates for concrete, concrete fundamentals, concrete mix design, testing procedures for fresh concrete, and trial batch and field adjustments.

Level II Course Coverage

The Level II course advances the principles introduced in the Level I course to include:

- **Math Review**
  Construction Math
  Mix Design Requirements
- **Fundamentals of Mix Design**
  PCA/ACI Mix Design
- **Trial Batch Mix Adjustments**
- **Problem-Solving Workshop**
- **Aggregates for Concrete**
  Aggregate Tests for Concrete
  Moisture Calculations
- **MDOT QA/QC Specifications**
  Inspector Responsibilities
  Contractor Responsibilities
  PWL Calculations



Level II Exam

The Level II exam is an open book exam consisting of approximately 30 questions. Students will be tested on the content of the course and will have two hours to complete the exam. Upon the successful completion of the exam, each technician will a receive wallet card and a plaque from the Michigan Concrete Paving Association.

Level II Recertification

Recertification for Level II is required every three years. Participants who are recertifying may choose which course days they would like to attend and are only required to sit for the exam. However, we do recommend that they attend all three course days so they are able to review the material and are aware of any recent changes to the material.

LODGING INFORMATION

Detroit: Doubletree Hotel
27000 Sheraton Drive
Novi, MI 48374
(248) 348-5000

Lansing: Fairfield Inn
2335 Woodlake Drive
Okemos, MI 48864
(517) 347-1000

Grand Rapids: Comfort Suites
4520 Kenowa Avenue SW
Grandville, MI 49418
(616) 667-0933

MICHIGAN CONCRETE TECHNICIAN—LEVEL I

The Michigan Department of Transportation requires that all concrete tested on federally funded projects be performed by a certified Level I Concrete Testing Technician. To obtain Level I certification, participants must complete the Level I Concrete Testing Technician course by receiving a passing grade on two written exams and one performance exam. The Level I course is a five day course (three instructional days followed by two exam days) that covers the fundamentals of concrete and testing procedures for fresh concrete. In addition, the course offers optional training on inspection procedures for concrete construction of roads and bridges.

Level I Course Coverage

The Level I Concrete Testing Technician certification requires that participants are knowledgeable in a variety of areas, including:

- **Testing Fresh Concrete (ASTM Guidelines)**
  Sampling Fresh Concrete
  Slump of Hydraulic Cement Concrete
  Unit Weight, Yield, and Air Content of Concrete
  Air Content of Fresh Concrete (Pressure Method)
  Air Content of Fresh Concrete (Volumetric Method)
  Making and Curing Concrete Test Specimens

- **Pavement & Bridge Inspection (Optional)**
  Types of Pavement
  Base Preparation
  Paving Equipment
  Layout and Formwork
  Concrete for Footings, Abutments, and Piers
  Concrete Deck Placement and Finishing
  Inspector's Responsibilities
  Acceptance Criteria

- **Concrete Fundamentals**
  Concrete Materials
  Handling Fresh Concrete
  Concrete Placement and Finishing
  Curing Concrete
  Hot and Cold Weather Practices

The course references the Portland Cement Association's "Design and Control of Concrete Mixtures" and the American Concrete Institute's "Technician Workbook." Participants will receive both books approximately one month prior to the course. Considering the amount of material covered, it is recommended that students review that material prior to class.

Level I Exams

Participants must successfully complete the following exams in order to become a Level I Concrete Testing Technician:

Fundamentals Exam – The fundamentals exam is an open book exam that consists of approximately 50 questions of various forms (i.e. true/false, multiple choice, fill-in-the-blank) based on the fundamentals of concrete. Students must receive a score of 70% or above to pass the exam.

ACI Written Exam – This one hour closed book written exam consists of 55 multiple choice questions based on seven field tests for concrete. An overall score of 70% as well as a minimum score of 60% on each of the seven field tests is required to pass the ACI written exam.

ACI Performance Exam – The performance examination consists of a verbal description of the sampling field test as well as a demonstration of the remaining six field tests. If a student is not successful on their first attempt, they will be permitted to review their reference texts and make a second attempt.

Concrete Construction Inspection Exam (Optional) – The Concrete Construction Inspection certification is an optional certification that covers pavement and bridge inspection. The open book exam consists of 50 multiple choice and true/false questions. Students must receive a minimum score of 70% in order to pass the exam.

CONCRETE TESTING TECHNICIAN CERTIFICATION DATES

DETROIT CERTIFICATION DATES

Classroom Dates	Lab Dates
January 10 - 12, 2005	January 13 - 14, 2005
February 7 - 9, 2005	February 10 - 11, 2005
March 7 - 9, 2005	March 10 - 11, 2005

GRAND RAPIDS CERTIFICATION DATES

Classroom Dates	Lab Date
March 21 - 23, 2005	March 24, 2005

GAYLORD CERTIFICATION DATES

Classroom Dates	Lab Date
March 29 - 30, 2005	April 1, 2005

LANSING CERTIFICATION DATES

Classroom Dates	Lab Dates
April 4 - 6, 2005	April 7 - 8, 2005

CONCRETE TESTING TECHNICIAN RECERTIFICATION DATES

DETROIT RECERTIFICATION DATES

Classroom Date	Lab Dates
January 12, 2005	January 13 - 14, 2005
February 9, 2005	February 10 - 11, 2005
March 9, 2005	March 10 - 11, 2005

GRAND RAPIDS RECERTIFICATION DATES

Classroom Date	Lab Date
March 23, 2005	March 24, 2005

GAYLORD RECERTIFICATION DATES

Classroom Date	Lab Dates
March 30, 2005	April 1, 2005

LANSING RECERTIFICATION DATES

Classroom Date	Lab Dates
April 6, 2005	April 7 - 8, 2005

LEVEL II CONCRETE TESTING TECHNICIAN CERTIFICATION DATES

LEVEL II LANSING CERTIFICATION DATES

Classroom Dates March 8 - 10, 2005

LEVEL II GAYLORD CERTIFICATION DATES

Classroom Dates March 14 - 16, 2005

MICHIGAN CONCRETE PAVING ASSOCIATION

3413 Woods Edge Drive
Suite B
Okemos, Michigan 48864

FIRSRT STD
U.S. POSTAGE
PAID
LANSING, MI
PERMIT #1083

5-DIGIT 48909

MS. THERESE BINKLEY
MICHIGAN DEPARTMENT OF TRANSPORTATION
CONSTRUCTION & TECHNOLOGY DIV.
PO BOX 30049
LANSING MI 48909-7549

MCPA Level I/II Concrete Technician 2005 Certification

Name _____ Social Security # _____
(as you wish it to appear on your certificate)

Ship all materials and mail exam results to my (choose one) O home O office

Home Address _____

_____

_____

Home Phone _____

A confirmation will be sent when materials have been shipped if an email address is provided.

Email Address _____

Company/Organization _____

Company Address _____

Phone _____ Fax _____

LEVEL I COURSE & EXAM DATES

	Class	*Dates*	*Deadline for Registration*
O	Detroit #1	January 10 - 14, 2005	December 10, 2005
O	Detroit #2	February 7 - 11, 2005	January 7, 2005
O	Detroit #3	March 7 - 11, 2005	February 4, 2005
O	Grand Rapids	March 21 - 24, 2005	February 18, 2005
O	Gaylord	March 29 - April 1, 2005	February 25, 2005
O	Lansing	April 4 - 8, 2005	March 4, 2005

LEVEL II

I am currently certified Level _____ My current certification expires _____

Course & Exam Dates

	Class	*Dates*	*Deadline for Registration*
O	Lansing	March 14 - 16, 2005	February 11, 2005
O	Gaylord	April 11 - 13, 2005	March 11, 2005

NOTE: Level I Technicians who take the Level II exam within 16 months of the date they were certified Level I are only required to take the Level II exam. All others will need to complete recertification in Level I.

RECERTIFICATION COURSE & EXAM DATES

	Class	*Dates*	*Deadline for Registration*
O	Detroit #1	January 12 - 14, 2005	December 10, 2005
O	Detroit #2	February 9 - 11, 2005	January 7, 2005
O	Detroit #3	March 9 - 11, 2005	February 4, 2005
O	Grand Rapids	March 23 - 24, 2005	February 18, 2005
O	Gaylord	March 31 - April 1, 2005	February 25, 2005
O	Lansing	April 6 - 8, 2005	March 4, 2005

Fees

Payment in full must accompany registration to hold a seat in a course. Registrations and substitutions will be accepted up to ten days before the course/exam date.

Level I Course

MCPA Member	$600
Non-MCPA Member	$900
Government/Municipal*	$650
Full-Time Student	$350

Level II Course

MCPA Member	$600
Non-MCPA Member	$700
Government/Municipal	$500
Full-Time Student	$200

*Level I & Level II course fees cover registration, a manual, refreshment breaks each day, and lunch on first lab day. Recertification rates are accepted with proof of previous certification (copy of letter, card, etc.) *Municipal employees may qualify for reimbursement from MDOT. Contact Terry Lavoy, MDOT, at (517) 322-6792 for details.*

Recertification

Level I	MCPA Member	$450
	Non-MCPA Member	$650
	Government/Municipal	$550
Level II	MCPA Member	$400
	Non-MCPA Member	$500

Other Applicable Fees

Late Registration	$100
(After the registration deadline for each course)	
Cancellations *(at any time)*	$200
Substitution of one student for another.	$100
Switching to Another Class.	$50

Certification Materials

Please note that course fees include all the materials you will need. Partifipants who are recertifying will receive a new ACI Concrete Technician Workbook (CP-I), but **NOT** an entire new manual.

Level I Materials

Concrete Technician Workbook (ACI CP-1)_____ x $65.00 = _____
Design & Control of Concrete Mixtures (PCA)_____ x $75.00 = _____

Level II Materials

The Level II Manual includes items below and other items not available for individual purchase.

Aggregates for Concrete (ACI E1-99)_____ x $40.00 = _____
Math Primer (Level II ONLY)_____ x $30.00 = _____

CANCELLATION POLICY:
There will be a $200.00 processing fee per person for cancellation of any class. Within 10 business days of the class, there will be no refunds.

Total Fee for Course $_____
Total Fee for extra Materials $_____
Total Amount Due $_____

Payment Method

I understand that no textbooks will be shipped until payment is received.

O My check (Made payable to *Michigan Concrete Paving Association*) is enclosed. $_____

O Credit Card: O American Express O Master Card O Visa
O Personal Card O Business Card

Card # _____ Exp. Date _____

Signature _____

Billing Address: _____

O I need special accommodations. Please describe: _____

O I am qualified to get the MDOT reimbursement and have contacted Terry Lavoy at MDOT, (517) 322-6792 for details on eligibility for reimbursement.

Please contact Kristy at (517) 347-7720 extension 15 if you have any questions.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

November 4, 2004

Dear Soil Erosion and Sedimentation Control Personnel:

The Water Bureau (WB) of the Department of Environmental Quality (DEQ) is providing the following training options for completing the Soil Erosion and Sedimentation Control (SESC) training required under Part 91, SESC, of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended (NREPA) and the Certified Storm Water Operator training required under Part 31, Water Resources Protection, of the NREPA.

SESC Training Options: Please be aware that the "grandfather" clause in Part 91 for completing the SESC training expired on January 11, 2004. Section 9123(1) of Part 91 requires that "each individual who is responsible for administering this part and the rules and who has decision-making authority for SESC plan development or review, inspections, permit issuance, or enforcement (including inspections) shall be trained by the DEQ." Please keep in mind that:

- The training is no longer separated into Phase I and Phase II. Those individuals with SESC decision-making authority must complete the classroom training or Self-Study training and pass the final exam with a minimum score of 70 percent.
- Training certificates are valid for five years. If you completed the training five years prior to this date (November 4, 1999) you no longer have a valid training certificate.

The following two training options offered this year are:

1. Classroom training ($175, includes an SESC Training Manual). The classroom training allows individuals the opportunity to attend two days of class prior to taking the final exam. The classroom training locations and dates are attached. Similar to last year, classroom attendance is no longer mandatory. Prior to last year, individuals had to attend both days of class, regardless if they passed the exam, to receive a training certificate. This year, if a person enrolls in the classroom training and misses one or both days, he/she will still receive a training certificate upon passing the final exam. Each person attending the classroom training will be allowed to take one free makeup exam, if necessary. The second makeup exam will cost $50. An individual cannot take the exam more than three times in a one-year period.

2. Self-Study ($50). This training requires an individual to study the SESC Training Manual on their own and, when ready, schedule to take the SESC exam at one of the DEQ District Offices. Exam dates and locations will be posted on the SESC Home Page after December 15, 2004. Copies of the SESC Training Manual can be downloaded from the SESC Home Page or purchased for $15 from the DEQ (see next page). The $50 fee covers the cost of the first exam. If necessary, a person may retake the exam at a cost of $50 per exam. An individual cannot take the exam more than three times in any one-year period. This training option is truly self-taught and DEQ staff **will not** be available to answer questions.

Note: The SESC Internet Training is no longer available; the Self-Study training replaces that training option.

Certified Storm Water Operator Exam: Similar to last year, the Certified Storm Water Operator Exam will be offered in the afternoon following the morning SESC exam. For those of you not familiar with Michigan's Storm Water Program, storm water coverage is required for all earth changes one acre or larger in size that discharge to the waters of the state. Storm water coverage is obtained through a Permit-by-Rule process. One of the requirements of Permit-by-Rule is that the site must be inspected by a certified storm water operator weekly and within 24 hours after a rain event that causes a discharge from the site. Those inspections are the sole responsibility of the landowner, including Authorized Public Agencies (APAs). For additional information regarding the Storm Water Program or the certified storm water operator training, please contact Mr. Mark Fife, Permits Section, WB, at 517-241-8993 or by e-mail at fifem@michigan.gov.

Note: Last year there was a lot of confusion regarding the storm water operator exam so the following is being offered to hopefully minimize confusion this year:

- The certified storm water operator training has nothing to do with the Part 91 training requirements. We offer both exams on the same day because several APAs requested that their staff be allowed to take both exams on the same day. Therefore, we have scheduled all SESC exams in the morning and storm water operator exams in the afternoon.
- Storm water operator exams are also offered monthly at various DEQ District Offices; a schedule of those exams can be accessed at: www.michigan.gov/deqwb (click on *Storm Water* under Surface Water Permits; then select *Construction Exam Schedule* under Certified Operator Training). There is no charge for taking the storm water operator training regardless if you combine it with the SESC training or take it separately at the DEQ District Office.
- Additional information regarding the storm water operator exam will be distributed during Day 1 of the SESC training for those desiring to take both exams on the same day.
- Please indicate on the "SESC Classroom Training Registration Form" if you are planning to take both the SESC exam and storm water exam. If you are only interested in taking the storm water operator exam and not the SESC exam, **do not use the enclosed form** to register for the storm water exam; you must contact the District office at the above Web site address to register. If you are taking the SESC exam, you cannot just show up for the storm water operator exam in the afternoon, you must be registered.
- For those registering to take both the SESC and storm water operator exam on the enclosed form, they must be taken on the same date; you cannot take the SESC exam at one location and the storm water operator exam at another location.

To register for the SESC classroom training, please complete the enclosed registration form and enclose a check made payable to the **State of Michigan** ($175 for each person), and mail to:

ROSALIE MASCHO
DEQ
WATER BUREAU – SESC
PO BOX 30438
LANSING MI 48909-7773

Classroom registration forms and fees must be received in this office by **December 10, 2004**.

The SESC Training Manual for the Self-Study training can be downloaded from the SESC Home Page (go to www.michigan.gov/deqwb and click on SESC) or purchased from the DEQ. If purchasing the manual, please enclose a check made payable to the **State of Michigan** ($15 per manual) and mail to Rosalie at the address above.

If you have any questions, please contact Rosalie at 517-335-1180, or you may contact me.

Sincerely,

Dick Mikula
Soil Erosion and Sedimentation Control
Water Bureau
517-335-3178

dm:rm

Enclosures

cc: Ms. Rosalie Mascho, DEQ

SESC Classroom Training for 2005

Upper Peninsula	Day 1	Day 2	Exam
Baraga	February 3	February 17	March 3
Escanaba	February 1	February 15	March 1
Newberry	February 8	February 24	March 8

Northern Michigan	Day 1	Day 2	Exam
Cadillac	January 11	January 25	February 9
Gaylord (Session A)	January 13	January 27	February 8
Gaylord (Session B)	January 20	February 1	February 10

Central Michigan & Saginaw Bay	Day 1	Day 2	Exam
Bay City (Session A)	January 6	January 13	January 27
Bay City (Session B)	April 7	April 14	April 28
Mt. Pleasant	February 9	February 16	March 2

West, Southwest, & South Central Michigan	Day 1	Day 2	Exam
Grand Rapids	January 13	January 20	February 10
Lansing (Session A)	January 19	February 9	March 2
Lansing (Session B)	February 1	February 16	March 1
Paw Paw	January 25	February 8	February 22

Southeast Michigan	Day 1	Day 2	Exam
Ann Arbor	February 2	February 23	March 16
Novi	January 26	February 16	March 9
Pontiac (Session A)	January 18	February 15	March 8
Pontiac (Session B)	January 25	February 22	March 15
St. Clair	January 27	February 24	March 17

SESC CLASSROOM TRAINING REGISTRATION FORM

(Please type or print the requested information.)

Agency: _____ Agency Contact*: _____

Telephone No.: (Area Code) _____ _____ (Ext.) _____

Address: _____

_____ Zip Code: _____

E-mail Address: _____

		DAY 1		DAY 2		SESC EXAM		Storm Water Exam	
Code	Name	Date	Location	Date	Location	Date	Location	Yes	No

Number of individuals registering: _____

Fee: $175 per person Total fee enclosed: $_____

Please make check payable to the State of Michigan.

*For agencies sending more than one individual, please designate one person for us to "contact" for confirming training locations, mailing certificates, and making necessary changes.

Please return to: ROSALIE MASCHO (Fax # 517-373-9958)
DEQ/WATER BUREAU – SESC
PO BOX 30438
LANSING MI 48909-7773